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DEVONPORT MUNICIPAL BUILDINGS COMPETITION.

DEVONPORT can boast that its rates are lower than those of any other county borough in the kingdom, but it can be said with truth that among other things which it must have denied itself to bring about this consummation are public buildings. The town has clearly grown up without thought or care about appearances, and is in this way on a par with many of our great manufacturing centres. The present municipal accommodation is small and totally out of date, and it cannot be doubted that new municipal buildings are a necessity rather than a luxury.

The site chosen is a peculiar one in form, an irregular rectangle, the principal side of which, Paradise-road, faces the London and South-Western Railway Station, while the top side fronts on to Trafalgar-road, a main tramway-route ; the two sides front on to Albemarle Villas, and a road on the other side of which is an irregular-shaped open space on which stands the Municipal Technical School.

Looking at the site on plan there may well have arisen doubts in the minds of competitors as to the most suitable shape the building should assume ; but an actual survey of the site would, we think, have dispelled any doubts in competitors' minds. The site is practically surrounded by private houses of no special importance or architectural merit ; the Technical School is planted down without any thought or consideration of its surroundings ; the whole feeling of the grouping is suburban rather than urban. What, therefore, would probably be right and proper in a large town—lining-up with the frontages—is out of place here, and the problem simply becomes one of planting a symmetrical building in an irregular site which may at some future time be modified. This is the point on which more than half the competitors have gone wrong, which emphasises the importance of issuing photographs of the surroundings of a site to competitors. The great inequality of levels of the site has also made the problem an unusually difficult one to solve.

The number of good designs submitted has been unusually large, and Mr. Ernest Newton must have had no small difficulty in arriving at his decision. As to the award, we may say at once that we are sure that architects will consider it a good one. We confess to some doubts as to the relative merits of the first and second designs, but, on the other hand, we think a very good case might be made out for either. The design placed third is, though inferior to the first and second premiated designs, an exceedingly able scheme of very pleasing architectural quality, and altogether we think that Mr. Newton may be congratulated on an excellent award.

The two schemes submitted which, to our mind, are pre-eminently first for architectural merit and ingenuity of conception are those sent in by Messrs. Jemmett & Tubbs and Mr. Hayward, of Birmingham, which we shall describe later, and both of which we hope to illustrate at a later date.

We think that Messrs. Jemmett & Tubbs' design might well have been awarded a first place, in saying which we are in no way criticising Mr. Newton's award. There are competitions in which there could be but one award, while there are others in which there are two or more awards for which an equally good case could be made out, and the award made must depend on the personal factor—the individual point of view of the assessor. Of the first type of competition are those like the Cardiff Municipal Buildings and the Port of London Offices, in which any award but the one given would have indicated a failure of judgment on the part of the assessor.

The selected design, by Messrs. Ashley & Newman, is simply and carefully laid out, and is in every way an excellent and workable scheme which, for convenience and simplicity, could hardly be improved upon, as will be seen from the illustrations in this issue. The large and smaller halls occupy the middle of the site ; in front of them, facing Paradise-road, are the Municipal Buildings, and in rear of them the police station and courts and fire-station, with the police-yard between it and the assembly hall. The large rates office occupies the centre of the ground floor of the municipal buildings, and over this is placed the Council chamber. The lighting of the large rates office by means of clerestories on either side of the surrounding offices is cleverly contrived. The departmental offices are well and suitably arranged, every detail having been well thought out. The Guildhall is well planned, having corridors on either side and a crush hall with cloakrooms on either side facing the street. The arrangement of police courts, station, and fire-station is cleverly planned and thought out. Elevationally the scheme is a little uninteresting, a fault which will no doubt disappear in detailing. The spacing of the coupled columns of the main entrance to the Guildhall strikes us as being somewhat unhappy on account of its unusual width ; we should have preferred five divisions separated by single columns to the arrangement shown.

The second premiated design, by Messrs. Harris & Moodie, possesses many excellent qualities ; for simplicity and evident directness it is, we think, unequalled by any submitted. The plan is an absolute rectangle practically unbroken by projections. The fire-station is placed in an isolated block to the north of the main building, and separated from it by a yard. A great feature of the planning of the municipal buildings is the arrangement of the rates office and the Council chamber, committee-rooms and ante over them, the committee-rooms being separated from one another by movable partitions so as to form one large hall entered from the Council ante—an arrangement which was hinted at in the conditions issued.

The planning of the police station and court block is equally direct, a long corridor from side to side on the level giving the public access to the courts. The magistrates' corridor links up with this, and is continuous with the corridor running round the whole group of buildings. It is, in short, one of those plans which is so masterly in its simplicity and directness as to give the impression that the problem was a simple instead of an unusually difficult one. The architectural treatment is exceedingly simple but on good lines, and those who have seen the authors' excellent work at Cardiff will not doubt that this scheme would have come out well in execution. Our readers can judge of the design by the illustrations we give in this week's issue.

The third premiated design, by Messrs. Knott & Collins, is an able and interesting scheme, but more complicated in its plan and less direct in general arrangement than the first two designs. The building is in plan cross-shaped, the central block containing the Guildhall and smaller assembly hall projecting beyond the main lines of the municipal buildings to the south of it and the court block to the north of it.

The fire-station forms, as in the preceding design, an independent building to the north of the main building, the space between the two serving as a police and firemen's drill-yard. The entrance to the courts is from the west road, the magistrates' entrance from the east road. The planning of the courts and their accessory offices is, generally speaking, good. In the

municipal block the main staircase, placed inside the building, not against the front wall as in the two preceding designs, forms the centre feature of the plan, and to one side of this staircase is placed the Council chamber, balanced on the other by a similar mass containing the three committee-rooms *en suite*. The Mayor's parlour, with its ante-room and robing-room, form the centre of the Paradise-road front, to right and left of which are the Town Clerk's and Education departments, both of them accessible from below by subordinate staircases. The Borough Surveyor's and Water Engineer's offices occupy the floor over the front block, bringing the whole up to the level of the Council chamber and committee-rooms. The architectural treatment is broad and simple, and composes well, the main entrance being marked with columns of the height of two stories, with a rusticated arch over. Similar columns mark the Guildhall and assembly-room fronts. With these exceptions, the fronts are treated with great reserve and simplicity. It will be noted that all the foregoing designs are of one type—that of a rectangular block placed on the site irrespective of and disregarding its irregularity of outline, the view which, we think, would have been adopted by almost all competitors who had seen the site or photographs of its surroundings.

The awards are consistent with one another; that is to say, the assessor clearly considered that this method of treating the problem was the correct one and, that being so, disregarded or put away designs which, though excellent in themselves, did not accord with this principle of treatment. The remainder of the designs submitted are either on these lines or follow the boundaries to a greater or less extent, or, in the case of a few competitors, treat the problem as one requiring two or more independent buildings.

It will also be noted that all the above designs are alike in another respect—the Guildhall and minor assembly hall being treated as a centre block, stretching from side to side of the site and separating the municipal building from the police courts, station, and fire-station.

Several of the best designs which we shall mention form a class by themselves in being, like those Mr. Newton has placed, planned independently of the boundaries of the site, but in which the Guildhall forms the main front to Paradise-road instead of the municipal accommodation. Such a plan has an advantage architecturally in giving a more dignified appearance to the principal front, and a disadvantage which may weigh with members of a public body and its officials because it takes away from them the finest outlook towards the sea. The suggestion contained in the conditions that the front to Paradise-road was a noisy one on account of the proximity of the railway does not appear on the site to be one which should have great weight, but it is nevertheless a consideration which must have weighed with many competitors.

Messrs. Jemmett & Tubbs send, in No. 81, by far the ablest and most original solution of the problem in a scheme which we should like, for the credit of architecture in this country, to see executed.

The Guildhall is placed in front, facing Paradise-street, and reached by a grand staircase in rear. Along the whole side of the Guildhall is a broad access corridor, and projecting features at either end contain the Council chamber and smaller assembly hall. Beneath the Guildhall are two floors of offices, and on the further side of the corridor before mentioned are the committee-rooms and other Council accommodation. The Mayor's rooms with mace-bearer's office and ante-room are placed in rear of the grand staircase. A deep excavated space or area behind gives ample light to the office floor immediately below, while on the floor below that are placed store-rooms and other accommodation which only require a moderate amount of light.

Behind this front plan the remainder of the accommodation is planned in a semicircle almost touching the Trafalgar-road front at the central point of the curve, and in the centre of this block, accessible from without and within the semicircular range of buildings, are placed the court block, flanked by the fire-station on one side and the police offices on the other. Every detail of the scheme seems to be workable, and the levels have been considered and adjusted in the most careful and efficient manner.

The advantage of this lay-out may be gathered from the block plan, a circle being the only form which adjusts itself perfectly to the oblique frontage of Trafalgar-road. The elevational treatment is excellent and in every way worthy of the plan which, as we say, we regret, in the interests of architecture in this country, is not to be executed. The drawings are admirably rendered in a French manner, and the whole scheme is a pertinent answer to those who are asking what we have to learn from France, which we feel might be summarised in the sentence—that artistic power and feeling can be shown as plainly in the handling of a plan as in the designing of elevations.

Another excellent scheme in which great skill and artistic expression is shown is that submitted by Mr. William Haywood, of Birmingham. The Guildhall is here placed, as in the premiated designs, across the centre of the plan, but the smaller hall is placed at one angle of the Paradise-street front, and is balanced by the rates office, both being low in elevation and giving emphasis and rhythm to the higher buildings between them. The sides of the building form a balanced and symmetrical architectural conception. The fire-station, with its segmental front, is a detached building in the centre of the Trafalgar-road front, but is closely linked up to the rest of the scheme, of which it forms an integral part. The court block is most ingeniously and carefully planned, and the elevations are exceedingly refined and delicate, while at the same time showing power and dignity. It is among the finest competitive schemes we ever remember seeing. We should be inclined to think that it owes its rejection to reasons of cost rather than any other consideration.

Another good design on the accepted lines is that of Mr. James Fulton, No. 61, in which the committee-rooms are planned along the Paradise-road front and the assembly room and Council chamber occupy symmetrical positions on each side of a central corridor running backwards towards the Guildhall. The court block occupies the centre of the Trafalgar-road front, and is flanked by the fire-station and police offices. Every part of this admirable scheme are well thought out, and the elevations are well detailed and dignified and pleasing in composition.

Messrs. Sullivan & Bucknell send, in No. 67, an original scheme rendered in an obviously French manner and consisting of a front block containing the Guildhall, which is approached by halls and staircases at either angle of the front, while on one side the assembly hall balances an office block on the other, which contains on an upper floor the Council suite. Behind this front building, and separated from it, are the police courts and other accommodation. The elevations are among the most successful of those submitted, and are marked both by reserve and power. Although there are many evidences in the planning of want of experience, we think the authors have every prospect of making their mark in competition design.

Messrs. Webb & Farey send, in No. 79, a scheme which is absolutely symmetrical and cleverly detailed and worked out. The four angles of the building balance and contain the two courts, the Council chamber and smaller assembly hall. The architectural treatment is quiet and dignified.

Messrs. E. Harper Brothers & Co., of Birmingham, send, in No. 37, another well-worked-out rectangular scheme, shown by an excellently-drawn set of drawings, and very carefully and well detailed.

Mr. Stanley Hamp, No. 38, sends a good scheme in which only part of the Paradise-road front forms the main front. The east road next Albemarle Villas is treated as the back of the scheme, and contains the secondary accommodation and extensions.

Other good symmetrical schemes are those of Messrs. Morgan & Cowles Voysey, No. 51, which shows knowledge and skill in detailing; Messrs. Batchelor & Hicks, No. 53; Messrs. Hall, No. 45; and Messrs. Briggs, Wolstenholme, & Thornely, No. 73.

In No. 14, by Messrs. North & Robins, we have a type of plan unlike anything else submitted. The accommodation is contained in two separate rectangular blocks facing on the front and back roads; between these is a wedge-shaped open space, at the broader end of which is shown a site for a future building. The planning and the detail are both good.

Mr. Coates Carter sends in an interesting design in No. 31, but apparently forgot that the conditions suggested a classical rendering, instead of which we are treated to a scheme reminding us of some of the interesting work he is doing for the monks of Caldy Island. The planning is peculiar but somewhat mediæval, and must be a result of an intention to get a little amusement out of an architectural competition!

Mr. Arnold Taylor sends in a well-thought-out plan, No. 44, which is spoilt by the breaking up of the front block into three divisions joined by a corridor; his elevations are, however, weak.

Most of the remaining designs follow the lines of the site either by endeavouring to build right up to them all round or by placing buildings along the front and back and joining them together by a curved or straight block along the shorter west road, thus making a fan-shaped disposition. Among the best of these latter is the scheme submitted by Messrs. Crouch, Butler, & Savage, No. 64, the treatment of the front to the west road, with its curved lines and the architectural character of the work, are alike pleasing, but we feel it is an effort and an attempt to give emphasis to a front which does not naturally call for it. Mr. Winter Rose's scheme, No. 62, is on very similar lines.

Of the schemes following the site lines in their entirety one of the best is that of Messrs. Jones & Thomas, of Cardiff, No. 33, shown by a very careful set of well-detailed drawings in a pronounced Greek manner. Mr. James A. Swan, of Birmingham, sends, in No. 27, a good scheme on similar lines; and Messrs. Richardson & Gill's scheme, No. 47, is quite the best of this type of plan. Both elevations and details are very pleasing examples of a dignified type of Georgian design.

Messrs. Gibson, Skipworth, & Gordon send in a design, No. 43, which shows knowledge of municipal wants, but is somewhat ragged and unfinished in plan compared with the best of the schemes submitted. The same criticism applies to many of the remaining designs. In the best of the designs submitted not only is the outer outline symmetrical, but the inner planning is so arranged as to give a pleasing effect of methods if it be on paper alone.

Mr. S. B. Russell sends in a good scheme, following the lines of the site, as also does Mr. Stuart Purdie, No. 35. Neither of the schemes submitted by Mr. Austen Hall, No. 1, or Mr. Septimus Warwick, No. 3, are up to the standard we have been led to expect from their joint productions. It may be, in their case, that the motto "*L'union fait la force*" is apposite and true.

We have reviewed the various types of designs submitted in this most interesting and successful competition. It is rare, even in these days of competition, that any demand on the profession is so well responded to. The amount of really indifferent or bad work is surprisingly small, the amount of clever and ingenious planning unusually large. A marked feature of the competition is the amount of good work which comes from provincial centres, notably Birmingham; and we feel in this, as in most cases now, that there is every possibility of the provincial centres obtaining the laurels of victory. The effect of the greater strenuousness of competition is also apparent in the very excellent work of many of the younger men, in devising educational schemes for whom their seniors may be assisting in the preparation of instruments for their own decapitation. But what does it matter if, as every speaker on architecture announces, we but live for the sake of architecture as an art, taking no thought of anything so sordid as our own preservation? Let us hope that, while getting the utmost profit from our private transactions, our public utterances may find absolute credence among our admirers; and that Providence may ordain that we find our way to our graves without undue suffering, and perhaps leave behind us those who will deal tenderly with our memories in sympathetic epitaphs!

THE DESIGNER OF THE PALACE OF CHAMBORD, AND INIGO JONES.

By PROFESSOR W. R. LETHABY.

THREE years ago, in an essay called "The Architecture of Adventure," I called attention to the studies of Leonardo da Vinci in "abstract architectural possibilities." Amongst these I specially mentioned some drawings which showed research as to the possibilities of staircase construction.—"Another study which, so far as I know has not been explained, is the four-flight interwinding staircase, which afterwards appears at Chambord. . . . Now, as Chambord was begun just at the time when Leonardo was living in France, and as the section of his studies which contains this remarkable exercise relates to the design for a palace for Francis I., we may, I think, conclude that this stair was Leonardo's invention" (*Journal* of the R.I.B.A., 1910, page 472). In the last number of the *Gazette des Beaux-Arts* (June, 1913) I find a most interesting article by the learned Marcel Raymond entitled "Léonard de Vinci, Architecte du Château de Chambord," in which he shows good cause for thinking that Leonardo was indeed the designer of Francis the First's great palace. The building is referred to in a letter of the King's dated September, 1519, in which he speaks of erecting "a sumptuous edifice at Chambord according to the ordonnance and devise which we have made." Now Leonardo lived in France from 1516 to 1519, and as early as 1506 he was advising the French Court on artistic matters. Many years ago it was customary to describe Chambord as by an Italian architect, but more recently it has been usual to point to the French characteristics of its workmanship and to claim it as native work. Of possible French masters one Jacques Sourdau is mentioned in 1521, but, according to M. Raymond, he could neither read nor write, and he may well have been an intermediary between the prime designer and the workmen. Lately M. Paul Vitry has gone back to the theory of Italian authorship, and he proposes the name of Domenico of Cortona as that of the probable architect; a view with which Mr. Ward agrees in his admirable account of Chambord. M. Marcel Raymond now produces a sketch by Leonardo which resembles the main block of Chambord, and he shows how the leading ideas of the palace—apart from more recent modifications—fall in with what is known of Leonardo's architectural ideals. More than any other architect, except perhaps Bramante, he was carried away by ideas of centrality and symmetry, and the form of plan which he preferred was based on the Greek cross. The plan of Chambord main block is designed on a Greek cross, surmounted by a dome, and enclosed by a square. Again, some of the dimensions, according to M. Raymond, show a preoccupation with the idea of proportion, which is well explained as "the theory that beauty results from the simplicity and unity brought about by correspondence in numbers." Further, the terrace roof is a mark of Leonardo's style; the coffered vaults, the great square mass of the main block, the tiers of arcaded windows, and the inlays (now slate instead of marble) are Italian characteristics.

M. Raymond suggests that the central staircase, with its flight within flight, is an afterthought, but that it was also derived from Leonardo. The staircase with a double spiral, he says, was unknown at the beginning of the sixteenth century. Moreover, Palladio refers to this wonderful staircase at Chambord as something new. He describes it as having four revolutions instead of two. Leonardo, in his studies, however, experimented with double and multiple flights. In his notes Leonardo points out that the lord of the castle might use one of the flights and the servants the other, yet they would not meet. This, of course, is the very point which is described to every visitor at Chambord, or it was in "my time." Palladio's engraving of the wonderful stair shows it at the centre of four halls just as it is found at Chambord. He says it was erected at *Sciambur*, built by Francis the Magnanimous. "There are four flights which have four entrances, and ascend each above another in such a manner, being at the centre of the fabric, that they serve four parts so that those who inhabit one need not go by the stairs of the others. Because it is a most beautiful invention and a new one, I have inserted it."

The description and illustrations must have been made from a verbal account and not from actual inspection; but it shows how the fame of the wonderful stair had reached Italy in the generation after it was completed, and this in itself is a point in favour of its Italian authorship. On M. Raymond's evidence it must, I think, be granted that Leonardo probably furnished ideas and sketches for the King's palace at Chambord. In any case, the stair with interwinding spirals must be his invention.

This staircase may have a more immediate interest for us, as it was studied by Inigo Jones, and it may be possible to get from this fact some evidence to bear on the question of the design of Whitehall Palace. Inigo Jones, who seems to have made it the plan of his travels that he should visit all the works described by Palladio, visited Chambord and gives a description of the double staircase. Now, in one of the many designs for the palace at Whitehall—that in the Print Room of the British Museum—there are large square blocks at the angles which have a circular staircase in the midst of each, surmounted by a domed lantern rising from a terrace roof. These features were certainly derived from Chambord, and it is, I think, much more likely that they were adaptations made by the man who had seen the original, rather than by Webb, who could only have known Chambord through Jones. Whoever may have made the drawings, there can be little doubt that the ideas of Inigo Jones are directly embodied in the design.

NOTES.

London University Site.

THE question of the acquisition of the British Museum site for London University has again come before the Sites Committee of the Senate of that body. From correspondence between Lord Haldane, Sir Philip Magnus, and Dr. Herringham, which was discussed by the Committee, we gather that there is still a probability of raising the money for this particular site, provided the Senate will approve of its acquisition. Here difficulties arise both from the pecuniary position of the University and the nature of the site. As regards the latter, it is pointed out that the site is not large enough unless future extensions could be acquired to Gordon-square on the north, Malet-street on the west, and Woburn-square on the east. So far as the land towards Gordon-square is concerned, we are told that it is possible to arrange for an extension, and that negotiations have already taken place; but no reference is made to future extensions in other directions. Again it is pointed out that "it is a great disadvantage that the four plots would oblige the central offices to be divided among four different buildings. This would make the offices not only much more expensive to build, but also much more inconvenient than if built as a continuous structure." We might add to this that, in our opinion, they would also inevitably be lacking in architectural character. We are well aware that a central position and proximity to the British Museum gives this site certain advantages. But if it is to be selected it is necessary that sufficient ground be available, that the University be given a free hand to divert existing roads and to lay out the whole area ultimately required in such a way as to render possible a dignified and characteristic group of buildings. Considering the greater possibilities of acquiring sufficient land in a central position on the south bank of the river, we should doubt whether the University would be justified in acquiring the British Museum site except under conditions which permit of a fine architectural lay-out.

Regent-street Quadrant.

WE are glad to see that the London Society is keeping a watchful eye on the ultimate development of Regent Quadrant and Piccadilly Circus. In view of the answers recently given in Parliament, the Society "desires to urge upon the Government that, having secured agreement through their Committee as to the necessary factors of the width of shop windows where they occur upon the ground story and other particulars affecting the architectural character and dignity of the Quadrant, they should now obtain the full advantage of this by the adoption of a consistent design prepared as a complete scheme to which all rebuilding should conform, and that no portion shall be erected until such design for the whole Quadrant has been prepared and approved." This Committee, it will be remembered, abandoned the idea of preserving the present character of the Quadrant and recommended such modifications of Mr. Norman Shaw's design as rendered it more suitable to the necessities of the retail traders. A large number of excellent designs on these lines were submitted in the competition promoted by this journal, and we understand the Committee has had the advantage of examining them. We shall naturally follow future developments with special interest, and we quite agree with the London Society that a definite scheme for the Quadrant and the Circus should be evolved before any further rebuilding is permitted.

The New Hotel on St. George's Hospital Site.

IF newspapers are to be believed—and are there any of us who do not implicitly believe everything we read?—a new hotel is to be built on the St. George's Hospital site at a cost of £1,000,000. Mr. Mallaby Deeley, who is said to be at the back of the project, thinks the site which overlooks Buckingham Palace and the Green Park is "admittedly the best of any great capital in the world." The history of the great hotel schemes in London is not wholly an encouraging one, but there is no doubt as to the excellence of the site and of its architectural possibilities. We hope the new venture will succeed and will prove a paying speculation, and that the very fine opportunity for architectural treatment will be taken full advantage of. It is a gratifying thought that a far stronger conviction is evidently shown on the part of speculators that architecture may pay even commercially, for it is *per se* even more important in the interests of the arts that this should be so than that artistic expression should be considered as necessary only in the case of public buildings, as the bulk of private buildings and speculative ventures are bound to greatly outnumber other classes of building.

Quantity Surveyors and Tendering.

WITH reference to the practice, which appears to be a growing one, of public bodies to advertise asking surveyors to quote the fees for which they would be disposed to prepare quantities for specific works, we have before us a Memorandum issued by the Council of the Surveyors' Institution in which that body draws attention to the evils and disadvantages of such a practice. As the Memorandum truly states, the Council have thought it necessary to take this step owing to the "fact that the surveyor frequently does not come into direct contact with the public bodies employing him, and that the nature of his duties is to the public mind somewhat obscure." The Memorandum goes on to say that "the employer, the architect, and the contractor are so largely dependent upon their experience, accuracy, and integrity that it would be impossible to emphasise unduly the necessity for exercising special care and judgment in selecting a surveyor to prepare bills of quantities." The practice of asking surveyors to quote competitive prices for doing professional work has, the Memorandum continues, resulted in the employment of incompetent surveyors, and also men who have been willing to undertake to carry out the work required in an impossibly short time. The statement is also made that any system by which the financial return for professional work is reduced below the point at which it becomes remunerative to properly-trained men must tend to lower the professional standard, and so, in the long run, prejudice the public who unknowingly have to depend largely on the ability and integrity of the surveyor. It is wisely pointed out that public bodies should first inquire what is the fair and proper remuneration for the work which has to be done.

Mr. March Phillipps and the Teaching of Architecture.

MR. MARCH PHILLIPPS writes in the *Morning Post*, under the heading, "Can architecture be taught?" He is impressed by the signs of the time—the generally expressed conviction that architectural training is a necessity of to-day, the tendency of the movement being indicated by the advocacy of Registration and the agitation in favour of some governmental control and encouragement on questions of natural art. As usual Mr. Phillipps criticises the results of the Renaissance, as usual he expresses his conviction that we have left the right and natural way by which our forefathers expressed their structural requirements. But we believe that Mr. Phillipps is in reality objecting to the inevitable, by which we mean the conditions and circumstances which must control modern life. We agree with him in thinking the old English village full of charm, expression, and picturesqueness, and no one would for an instant say that our old mediæval cities and those of the Continent were not more instinct with romance and more picturesque than the best of modern work. But we cannot, except to a limited extent in some garden suburb, recreate the old conditions; our problems are of a different calibre and order, and the fittest methods for their expression are of a different order and character for that very reason. The lofty office building, the immense warehouse, and the American skyscraper are all problems forced upon us by the conditions under which we live. We cannot, if we would, carry out out avocations in thatched cottages or mediæval barns. The qualities which Mr. Phillipps finds most admirable in our vernacular architecture are for the most part those which can only be expressed in such structures as our forefathers required, and his attitude is much that of a man who, having a pronounced taste for folk-lore, criticised a chemical manual or problem play as being indifferent literature or bad art because they had not for him the same fascination that folk-lore possessed. We cannot an' we would build our towns as the mediæval hamlet was built, and had we a ten-story warehouse of the date of William Rufus, we doubt if its remains would move us to ecstasy. Art is bound to express itself more intellectually and in stricter accordance with science in the modern world than in the days when Europe was emerging out of barbarism, and we may like the outcome less than before, and yet it may be the best and truest expression of modern life notwithstanding. Knowledge may destroy cherished illusions, but it can never do us or our work harm.

Our Village Architects.

UNDER this heading Mr. March Phillipps discusses the decadence of modern building in our villages, and contrasts it disadvantageously with the work of the past. He says that "it matters very little what sort of stuff painters choose to exhibit in galleries, or even what sort of buildings architects set up in our capital, provided that the main body of artisan labour remains flexible, alert, and capable of adapting itself readily to the needs of life. There are signs, however, that it is losing those qualities, and in that respect the villages of England in particular have a somewhat disquieting tale to tell." We agree with Mr. Phillipps in considering that the everyday work which surrounds us and in the midst of which we live is of greater value as a factor in national life than the less easily appreciated works of exceptional character and merit, but we do not at all agree with him in thinking of little importance what is painted or what the great buildings of the capital are like. To say this is to assert that art is not good in itself and is only important when it arises out of certain special conditions with which Mr. Phillipps is in sympathy. Of village architecture he says it has "that gift which more than any other belongs to mediæval tradition—the flexibility and intimate response to all the casual needs of the community." Precisely, but how far will this help us in building a great block of Government buildings or public offices? They have not, we take it, to respond to "the casual needs of the community," but to serve definite and defined uses, and to express them logically. And yet why, because we admire our old villages, should we not go the best way to meet quite new conditions? The natural destruction of much of what Mr. Phillipps deplores simply arises from the labour-saving conditions of the modern world, not from what we almost expect Mr. Phillipps to describe as the disease of the Renaissance. It may be, and we believe is, now necessary that art should permeate downwards from the cultivated, instead of being to some extent an inherited taste with all; but however this may be, if it be art it is so intrinsically, however and whenever produced.

THE "breaking-up" ceremony of the Architectural Association took place on Friday last week at No. 18, Tufton-street, when a large company assembled to view the work of the students and to hear the President announce the awards. Mr. W. Curtis Green, F.R.I.B.A. (President), was in the chair and read out the following list of

AWARDS AND PRIZES.

Day School.

First Year.

Book Prize for first place in History Test paper and general excellence in this subject—W. H. Lloyd.

Book Prize for the first place in Construction Test paper and general excellence in this subject—F. P. M. Woodhouse.

Architectural Association Sketch Book for first place in Freehand Drawing Test—W. H. Lloyd.

The Studio Prize: Best portfolio of drawings made during the session—F. A. Eschawzier.

Hon. mention and authors of drawings selected for School portfolio—G. G. Clark, J. L. Murgatroyd, W. H. Lloyd, D. S. Glover, H. Schien, J. H. Hopewell.

Special Prize for distinction in test papers given by Headmaster—N. F. C. Day.

Second Year.

Travelling Studentship £15, for studio and lecture work during session, 1912-13, and general progress—J. Burford.

Specially commended, and Special Prize given by Headmaster—A. Stanhope Forbes.

Hon. mention for general progress during session—A. S. Furner, M. T. Waterhouse, J. H. Jacobs, H. F. Gossling, B. George.

End of Session Study.

Special Prize given by Headmaster: Study placed first—M. T. Waterhouse; study placed second—J. Burford; study placed third—D. C. L. Derry.

Drawings selected for presentation to School portfolio—J. Burford, A. S. Furner, A. S. Forbes.

Students awarded the Association Two Years' Course Certificate: J. Burford, with honour; M. T. Waterhouse, with distinction. B. George, satisfactorily; P. Butt, satisfactorily; A. S. Forbes, with distinction; C. J. Brooks, satisfactorily; J. H. Jacob, satisfactorily; A. S. Furner, with distinction; D. C. L. Derry, satisfactorily; H. F. Gossling, satisfactorily.

Third Year.

Travelling Studentship, £21, for best work in the year—R. S. Wallace.

Ditto, Second Prize, books value £2 2s.—H. J. H. Dicksee.

Book Prize for first place in Test Subject (£2 2s.)—R. H. Philp.

Book Prize for second place in Test Subject (£1 1s.)—R. S. Wallace.

Book Prize for greatest progress (£2 2s.)—H. J. Tebbutt.

Second Prize for greatest progress (£1 1s.)—F. A. Addey.

Recommended for the Jarvis Scholarship, value £40—H. J. H. Dicksee.

New Scholarship for Day School, Mr. Brian, Berkhamsted School.

Evening School.

First Year.

Book Prize, value £2 2s.—E. A. D. Tanner.
Second Prize, value 10s. 6d.—L. Claydon.

Second Year.

Scholarship free pass to Third Year, value £15 15s.—H. A. N. Medd.

Third Year.

No awards.

Fourth Year.

Travelling Studentship, value £15—D. J. Gordon.

Book Prize, value £2 2s.—J. B. M. Welch.

Hon. mention—T. W. Dowsett, W. Harkess, H. F. Prynne, H. D. Archer, A. J. Thompson.

Lectures.

Elementary Physics: Book Prize—L. Claydon.
Elementary Construction: Book Prize—L. Claydon.
Materials: Book Prize—H. J. H. Dicksee.
Intermediate Construction—Book Prize—R. Haig Philp.
Steel Construction: Book Prize—A. S. Burnett.
Advanced Construction: Book Prize—H. J. Tebbutt.
Hygiene: Book Prize—H. J. H. Dicksee.
Grecian, Roman and Byzantine: Book Prize—L. Claydon.
Mediæval Architecture: Book Prize—H. A. N. Medd and B. George (equal).
Renaissance Architecture: Book Prize—E. A. D. Tanner.

Presentation to Mr. Maule.

The President

said he had to perform a pleasant task, and he was glad it was the first that he did from the chair. He thought that it would have been appropriate for Mr. Horsley to have made the presentation to Mr. Maule, but he was unable to be there. He wrote from Switzerland that he would have liked to have taken part in the proceedings, but, at any rate, he had had the pleasure of choosing the gift which he hoped Mr. Maule would like. The Council and members of the Architectural Association, students, and parents knew that he could say nothing which would exaggerate their indebtedness to Mr. Maule for his devotion to the school. Mr. Maule had endeared himself to all of them; every member of the Architectural Association thought of him and spoke of him in terms of affection and respect, and he had laid a strong hold upon all of them. For ten years Mr. Maule had directed the education in this school, and built up the first school of architecture in the country. During that period 375 day-school students have passed through his hands and received the impress of his outlook and standards. His reward was in the work that they were now doing and the place that he occupied in their thoughts. The little present was no measure of that place: it was merely an emblem about which their thoughts and his thoughts could congregate. They would be pleasant thoughts on their side of gratitude to him for all he had done for them; on his, of gratitude for what he had been able to accomplish for their art. Few of them were allowed to do so much as Mr. Maule had done. Might he give expression to the hope of all of them that at the end of a long and successful life he would look back with pleasure at these ten years as a step both in the development of his own career and also in the development of a sound system of architectural education, towards which end they were all working, and the foundations of which he had done so much to lay?

The President then presented Mr. Maule with a pair of silver candlesticks which bore the following inscription:—"Presented to H. B. G. Maule by some students and fellow-members of the Architectural Association on his relinquishing the position of Headmaster of the School of Architecture, July, 1913."

Sir Aston Webb, R.A.,

said that Mr. Maule had been engaged in what was known in the theatrical world as "making a part." It was comparatively easy to act a part when it had once been made, but Mr. Maule had had to make it, and from the beginning to decide the lines which the teacher of architecture in the Association school should take. He ventured to think Mr. Maule had taken the right line and had ensured the success of the school. The best testimony that he (Sir Aston) could give to the school was that he sent his youngest son to it, and both of them had done nothing but rejoice since over the fact. Mr. Paul Waterhouse had done the same thing, and in the list read out he caught the names of the sons of several other "extinct volcanoes" who would take the part of their fathers in the future perhaps more worthily. He with Mr. Basil Champneys were the first visitors to the schools when they commenced in that room, and he had therefore had the closest opportunity of seeing Mr. Maule and the students at work, for he knew that Mr. Maule had the faculty of acquiring their affection and respect and of getting the best work out of them. Three qualities were necessary if a master was to get the best out of his pupils, and they were, firstly, that he should have sympathy with the young men and know something of their history and their ambitions; secondly, that he should be able to manage the masters under him; and, thirdly, that he should be able to manage that necessary but difficult class, the anxious parents. Mr. Maule possessed all these qualities. As to the school itself, anyone must be struck with the change in it to what it was. Mr. Maule's task had been difficult because the scheme of architectural education had undergone an entire change since he first began his work. At one time it was pretty much a case of "go as you please," but they had now come to a systematic training for students which he thought was appreciated and would have a great effect. When the school was first started individuality in design and effect was encouraged, but now it was somewhat the other way, and the young men were encouraged to work all very much in the same manner; not to show their individuality in the first instance, but to learn the grammar of traditional architecture, leaving to a later time when they worked for themselves to develop individuality in the designs of buildings.

Mr. Paul Waterhouse, M.A.,

as one of the "extinct volcanoes," expressed his pleasure at having the opportunity for a brief eruption. He first congratulated Mr. Curtis Green on being in the chair, and said that, having been for some time External Examiner of the Architectural Association School, he had had special means of seeing the work. Some years ago the heads of the profession used to worry themselves as to whether architecture was a profession or an art. They might perhaps more profitably worry themselves whether it was an art or a craft, and he imagined the difference was that one could teach a craft, but one could not teach art. He did not say they could not learn an art, but they could not teach it. There was, however, a good substitute for teaching art, and this was what Mr. Maule had got hold of—he had taught himself to inspire in young men that spirit without which art was impossible. It was a marvel to him how Mr. Maule had been able to fill the men working under him with such enthusiasm. As to the school, he thought it was full of hope, and he felt that it was likely to lead to very great things in the future.

Mr. H. B. G. Maule,

having expressed his appreciation of the gift, said he felt that in the affection of his old students he had something which was more tangible than any present. In saying that, however, he did not mean that he valued the present any the less. One thing which he felt deeply was that the continued success of the school had been secured by the selection of his successor. Perhaps he ought to have said successors, because he would like to couple with the name of Mr. Atkinson the names of Mr. Cable and Mr. Potter. It was true, as Sir Aston Webb had remarked, that during the ten years he had been at the school he had been extremely lucky in his staff, and the success which had been achieved was probably due far more to those men than to himself. The matter of architectural education was still in its infancy, for in the last seventy years things had changed very much, and they were still changing. It could not be said with any assurance that they had yet reached any definite procedure, and he did not think it was likely that they would for some time. In architecture they had changed absolutely from the old pupilage system, and they had not, as they had in France, been hundreds of years building up an architectural system. He did not believe that any country could borrow, wholesale, systems of other countries, but he did believe that the real aim and essence of every education was ultimately to fit men to go into the world and do good work; and to develop their capacities, and do that which was best in them. The ultimate result of the work of their school lay not in the pictures to be seen on the walls but in the work which the young men would do five or ten years hence. They had begun to realise in this country that education did not consist in drawing out the brilliant boy, but in the fitting of young men for life. In the architectural profession there was a great temptation which did not occur in other professions, which was that a great deal of the result of the training was to be seen in the drawings, and that school must guard against any too great rivalry of schools in the production of drawings. They had been trying in the school to get men to work for their own sake, and to get into a system of working whereby they learned to develop their capacities. He had only followed on the lines of Mr. Bolton, their first Headmaster, and those lines were to

endeavour to make men be sufficient unto themselves and not to rely too much on what was done for them.

Mr. Chas. Sims, A.R.A., gave a short address to the students.

The President

said he had no doubt that when the works exhibited were seen more generally, there would be critics who would exclaim that this was not teaching the business of architecture; their reply was it was only part of so doing, it was introducing the student to the elements of design. He came across two lines of Montaigne which expressed what he felt about this work—"The wind about the tower coming who knows whence and whither, could one enjoy its music unless one knew the foundations safe 20 ft. below ground line?" They knew that Mr. Maule had laid the foundations safe, and that his work would be kept up by Mr. Atkinson and his assistants, and that when the wind blew on the tower they could enjoy its music. He hoped they would all have a good holiday and a profitable architectural bag, and come back to hard work. Those of them who were leaving or passing on to the Royal Academy Schools, where he heard they won all the prizes, would remember the Architectural Association, and, if opportunity arose, do it service. He thanked Sir Aston Webb and Mr. Waterhouse, both old members and very good friends of the Architectural Association, and also Mr. Sims, for coming there that afternoon. As they all knew, the Architectural Association was run in the service of architecture by young men for young men, but the source of their being was the older men, and they looked to them not in vain for fatherly interest and encouragement. The Architectural Association was unendowed; its strength was the strength of its members, old and young; it was true of them to say that the more they changed the more they remained the same. As they grew they had their officers, the annual Council, and the last year's men at the school, and these passed on to wider duties, and became a source of strength to the Architectural Association. New men took their place. Each year the quality of the work done in the school improved, and the facilities for doing it were greater. When they looked at the work on these walls, done by third year's students, they were filled alternately with amazement and despair; amazement that it should have dawned upon men that it was possible to teach the grammar and elements of design; and despair that it was now too late for some of them to enter the school themselves.

INDIAN ARCHITECTURE.

COLONEL SIR R. CARNAC TEMPLE, Bart., C.I.E., presided at Caxton House, Westminster, on Monday afternoon, over a meeting of the East India Association, when Mr. F. O. Oertel, F.R.I.B.A. (Superintending Engineer, Allahabad), lectured on "Indian Architecture, and its Suitability for Modern Requirements."

Mr. Oertel

said that Mr. Havell had read a paper before them in October last, but as he and others seemed to be under the impression that the Public Works Department in India were the great opponents of indigenous art and architecture, it might not be out of place if a member of that much maligned service raised his voice in protest against those accusations and in favour of indigenous Indian architecture. When the English first settled in India they brought with them the Renaissance style then in vogue in England, a form of which had become firmly established for all European buildings in India long before the Public Works Department came into existence. It was hardly fair, therefore, to hold that Service responsible for it and to sneeringly dub it "the Public Works style." It was true unfortunately that it was this style alone that all their draughtsmen were conversant with, and as the engineers were not themselves usually trained architects they could not be blamed for continuing a style in which it was easiest to work and which met with the approval of the authorities as being the most economical and suitable for the purpose. The system of having standard plans of various kinds of public buildings had, it must be admitted, helped to stereotype the style and produce a monotony which was justly condemned. At the same time, before criticising a body of engineers for failing to evolve a satisfactory style for public buildings, it must be remembered that even in Europe the combined efforts of all the architectural profession had failed so far to produce a really satisfactory solution of this problem. There had, however, been a great improvement in this respect of late years in India. Trained architects had now been appointed by nearly all the local governments—an innovation brought about by Lord Curzon—and there had been a distinct tendency towards the adoption of indigenous styles of architecture for the more important buildings. On returning to India after his architectural training in England (under Mr. Phené Spiers) his first efforts in design were directed towards introducing some improvement in the European styles in vogue, but he had now completely come round to the view that salvation for India lay in the adoption of some form of Oriental architecture, which had grown up in the country, and was most suited to its climatic and other conditions. It was curious to note that most English architects working in India sooner or later arrived at the same point of view, and either adopted indigenous architecture or so modified the Western styles as to give them a strong Oriental flavour. The same conversion might be noticed in the case of European art experts who came out to India to teach their art and ended by learning from the Indian craftsmen. No one who really came in contact with Indian art and architecture in their natural surroundings, and devoted some attention to them, could escape the fascination exercised by them; but it took several years' residence and work in India before a man could throw off the thraldom of European ideas on the subject engrafted in him by his early training. While acknowledging the incomparable beauty of some of the Indian buildings, some architects hesitated to adopt the style, as they thought it too costly and impractical for everyday requirements. It was generally considered that the only good examples of Indian architecture to be found in the country were temples, tombs, and mosques; but this was by no means the case. Charming specimens of domestic architecture might be seen in the Moghal palaces and residences of Indian chiefs, while there was hardly a bazaar which would not furnish delightful instances of the humbler class of dwellings, so that there was no lack of materials for the architectural student. The fear that the indigenous style was too costly for every day use was disproved by the buildings already erected. There was no necessity for introducing expensive features, such as domes and kiosks, in all buildings. They could be given a distinctly Indian appearance even without these features, and the cost could be kept down by selecting the cheapest materials locally available.

As for the fear expressed that the Indian style did not lend itself to the provision of sufficiently spacious and airy apartments, or to a plan suitable to modern Western requirements, he did not think there was any foundation for such an assertion. The style could be successfully applied to any plan whatever. A number of handsome edifices had been erected within recent years at Allahabad, Agra, Lucknow, and elsewhere, in the indigenous style, which fully proved its adaptability to all modern requirements. For instance, one of the Allahabad University buildings contained a hall measuring 130 ft. by 60 ft. in plan. The cost of this building, erected in brick and stone, was 5½d. per cubic foot of contents, which would be found to compare favourably with buildings of equal pretensions in other countries. Plainer, but still nice, buildings in the same style could be erected at about half that rate by the elimination of as much stone-work as possible. Mr. R. Chisholm and Sir Swinton Jacob were the two men who had done most for indigenous Indian architecture, and had given an impulse to its revival which would never die. They had guided and trained, with their refined taste, a number of Indian draughtsmen, who were now successfully competing in all public building competitions. Sir Swinton Jacob had always made it a rule to work in co-operation with Indian craftsmen, both in the design and execution of work. He felt sure that the future of Indian architecture lay in such co-operation of the East with the West. Although indigenous architecture was still a living force in India, some outside encouragement and guidance was needed to enable it to rise again to the height which it once occupied. What they wanted for India was not a Greek and Roman Renaissance, but a Renaissance of Indian art and architecture. The want of this was being deeply felt in India, and it had become their clear duty to help and foster the movement and guide it into the right channel.

At the present moment a great and unrivalled opportunity had come for the encouragement of Indian art in the building of New Delhi, and he trusted this opportunity would not be allowed to go by without being taken full advantage of. Those who advocated a Colonial Renaissance style for our buildings at the imperial capital forgot the true significance of the move to Delhi and of their position in the country. They are not in India as colonists intent on making a home there as nearly like the one they had left behind. They now professed to exercise imperial sway over all India, with the consent of the people and for their benefit. The British were too apt to disregard sentiment and appearances and to forget that the Indian peasant would largely judge the character of their rule by the public buildings in which their administration was carried on. If these were foreign to his understanding, the British raj would remain foreign to him, however just, equitable, and beneficial it might be.

European Renaissance already reigned supreme in most of their Indian port towns, such as Calcutta and Rangoon, while Bombay fell a victim to the Gothic style, which was in fashion in England at the time when the more important Bombay buildings came to be erected. Which of the many styles now practised in England was to be adopted for Delhi was still a secret. The selection lay with the eminent architects who had been appointed to design the buildings for the new Imperial city. He trusted that they would recognise that, however suitable the Palladian style might be for Calcutta and the Gothic for Bombay, both semi-European port towns of their own creation, neither style would do for Delhi, situated as it was in the very heart of India, and full of its most sacred traditions. He devoutly hoped that Mr. Lutyens and Mr. Baker would recognise the great opportunity for good or evil entrusted to them, and would not, for the sake of hastening the task, neglect to study Indian architecture on the spot. He knew that it was calling for a great deal of self-denial on their part to expect them to forego even for a time a lucrative practice in order to do this, but he thought the occasion was one where such a sacrifice might be expected of them. The names of the builders of New Delhi would go down to history, and the task entrusted to them was so great and glorious that all other considerations must be thrown aside for it. He knew that the building of the new capital could not be indefinitely delayed, but one or two winters devoted to the study of Indian architecture would not be waste of time, as during the interval the work of preparing the sites and laying out the city might be progressing.

In the course of his residence in the East he had toured all over India, Burma, and Ceylon, occupied in visiting all the most notable buildings in those countries; he had watched with interest for more than a quarter of a century the development of their own efforts at building in India, and that the question of the most suitable style for the purpose had been ever with him, even although his chief duties had lain in the more prosaic work of constructing roads and bridges, waterworks and drainage schemes. The conclusion he had come to was that Indian architecture was undoubtedly the most suited to the needs of India, and it was his firm conviction that Indian architecture was bound to prevail in the end over all imported styles, whether they liked it or not, and whether they helped on the process or not.

The lecturer proceeded to show seventy-one slides of different buildings in India.

Considerable discussion followed on the paper, in the course of which

Mr. R. Chisholm

said the first important building he constructed in India was in the Renaissance style, and long before that was finished he was busy revising the plans of another important building in the Renaissance style, but with modifications on the Indian style. It was quite a mistake to imagine that the Indian was an expensive style. He believed that the eminent architects who had gone out to India to plan the New Delhi would end by being more Indian than any of them. Mr. Chisholm showed an interesting sketch of Mr. Lutyens' design for the Municipal Art Gallery in Dublin, which he (Mr. Chisholm) had put into Indian architecture.

Mr. H. V. Lanchester said he had not had the experience of Mr. Chisholm, but he believed there was some misapprehension as to the cost of Indian buildings. If they wanted an elaborate building Indian architecture was costly, but not more so than the same degree of elaboration in Renaissance style would be; if indeed so costly. The lecturer had spoken about the resuscitation of the Indian style, but he did not think it was so much a resuscitation as the getting together at Delhi the men who were working and doing splendid work over the whole of India. He had seen beautiful work grow up under his eyes done by the *mistri*, or master builders. It seemed to him that the position of the architect in India should be something like that of the intelligent client in England. The architect should be able to put the definite requirements, and then ask the Indian to carry out in his own art the requirements put before him. If they had the sympathy between the architect and the craftsman, they would get the most magnificent buildings in India, as was the case when the same association took place between the Moghal emperors and the Hindoo craftsmen.

Mr. Gunge Ram, speaking as an Indian architect, lamented the fact that no Indian architect was appointed on the Committee sent to consider the planning of Delhi.

Mr. H. H. Statham said that architecture was not ornament, it was the expression of an idea in plan, section, and structure; decoration was only an addition. Buildings for English Government offices could only be planned by English architects, who could not be logically expected to plan as Englishmen and then adopt an Oriental treatment. Renaissance architecture had been entirely misrepresented in the paper; it was no mere imitation of Roman architecture; the Renaissance architecture of Italy and France in the sixteenth and seventeenth centuries was full of beauty, variety, and individuality, and might still be so; and it was the architecture most representative of our civilisation. Any attempt at revival of the Moghal architecture of India would only have the same fate as our revival of Gothic; in half a century it would have lost all its interest, and would be seen to be an unreal thing. We should do as the Romans did, carry our own architecture with us; build at Delhi as we would build in London, only with due regard to circumstances of climate and surroundings. There would thus be an opportunity of new treatment of decorative detail on the basis of Renaissance architecture—treatment suggested by local character of vegetation and material, and on which native craftsmen might well be employed. It was really a great opportunity for something new in architecture. The examples which had been shown of modern buildings in Indian style seemed to him most unsatisfactory examples of architecture.

THE ROYAL SANITARY INSTITUTE:

EXETER CONGRESS.

THE following is a continuation of our report of the Twenty-eighth Congress of the Royal Sanitary Institute, held at Exeter:—

School Buildings and their Future.

Mr. James Jerman, F.R.I.B.A., F.R.M.S., in a paper on this subject, said that the intimation that important changes are pending in the administration of the education work of this country naturally arouses in the minds of those who have to do with the provision of school buildings thoughts of changes in methods and altered requirements. The element of cost governs procedure in nearly every instance, but the varied conditions at the present time make it extremely difficult to correlate accommodation and cost. For example, how is it possible to get any common basis where requirements differ so widely regarding floor space in the three main divisions of school building, as influencing the areas of classrooms—secondary schools, special schools, and elementary schools. Each circumstance varies with the curricula to a certain extent, but this alone cannot account for the wide margin of variation indicated under present regulations. The question of floor area per child has been selected as a topic for discussion, as the numbers to be accommodated in each class under one active teacher is a fact of immense importance in dealing with school planning. The reduction in the number of children in the classes, in elementary schools especially, makes it difficult to cope with the varying conditions.

This is intensified by the growing desire to assemble all classes in individual classrooms, and to abandon the collection of several classes in main rooms imperfectly divided by curtains of various materials. The comparatively small classes for secondary schools, and the still smaller classes for special classes, provide a reasonable and workable basis for planning, but the difficulty lies in the other schools where the bulk of our population have to be educated. It is not a question, apparently, of how many children a competent teacher can effectively teach in a well-designed, lighted, warmed, and ventilated classroom, but rather how to cope with the varying numbers into which the head teacher finds it necessary to arrange the classes. Can, therefore, the teacher be assisted in the future by designing the school building in such a way that he may allocate rooms to suit the size of the classes without entailing additional building? By the present method of planning the head teacher has no opportunity of diminishing or enlarging classes for special work or teaching. Instead of certain classes being permanently allocated to certain rooms, would it not be preferable to provide rooms of varying sizes for classes from twenty up to sixty, and which classes might proceed to these rooms from wide corridors and verandahs without disturbing the school generally? On occasions upper standards and special classes should have opportunity for assembling in rooms of small sizes, instead of having to occupy the stereotyped regulation classrooms for forty, fifty, or sixty with the consequent overcrowding in the case of the rest of the school. It is suggested that there should be more elasticity in classroom dimensions available for the teacher.

The open-air tendency of the present generation demands that suitable accommodation should be provided, especially in country schools, for teaching in the open. Could not such accommodation be arranged in connection with the playshed, which should be a better and more useful structure than the usual one—mere caverns, with no attempt at ventilation, lighting, or comfort? This suggestion might combine the two purposes; but does not the verandah attached to the main building more conveniently meet the case? The position and aspect of such a verandah must affect the future planning of schools, as there are problems of interference with lighting and increased costs to be met. Should the verandah make the corridor unnecessary a reduction in cost might be effected.

In the past there has been a tendency to preserve or maintain sites close to the dwellings of the school children, the plea of convenience and accessibility being urged. Surely on no grounds can this be defended; the outskirts of a town afford opportunities for acquiring larger sites at less cost, and reasonable outlook in selection appears to be all that is needed to properly place new buildings in the future. Town-planning methods should vastly facilitate the future positions for school sites, and only those who had to face the difficulties of obtaining sites in the earlier days of 1870 can explain the hemmed-in and very restricted school sites then chosen in out-of-the-way places and side streets.

Without influencing to any material extent the cost of school buildings a much larger and more shapely site would in the future enable the architect to spread his building to advantage and command a suitable aspect, not too near the boundaries. It may be expected that future regulations will require much increased areas for sites beyond that now stated. This is suggested having regard to the provision of workshops, cookery, and laundry classrooms, outdoor instruction and organised games, giving more ample opportunities for both paved and natural surfaces to the playgrounds, besides garden plots, with their tool-houses. Whilst ordinary sanitary arrangements are possible in most districts there is still a lamentable want of water supply in too great a number of instances. The provision of accommodation to give opportunity for the use of a bath, or simple forms of spray baths, should be possible in every school.

Some accommodation should also be provided in the future for the numbers of children who, from force of circumstances, must remain over the dinner hour, and in many cases have not even the shelter of a playshed. The verandahs may offer some suitable accommodation, but a messroom would be more appropriate, with opportunities for obtaining water in winter and summer.

The question of new methods of construction offers a tempting subject for discussion, and in itself might provoke expressions of opinion covering a very large area. May it, however, be premised that any idea of experimental or novel methods of construction would be considered unsatisfactory, when the safety and possibly the health of the rising generation would be imperilled or even affected. The endeavour to gain experience at such great cost and anxiety would suggest that such experiments be first tried and proved in buildings devoted to less importance than the education of children. It may be that provision for periodical and rigorous inspection of buildings constructed in a novel manner may render them safe and serviceable, but it would seem opposed to all the traditions of good building that such important and public buildings should be constructed other than in the safest and soundest manner possible. The abolition of inaccessible spaces between floors and in roofs would be a gain, minimising risks of infection and more wholesome conditions. Solid flat roofs, instead of the dust-gathering surfaces over porous plastered ceilings in the ordinary construction of slated and tiled roofs, would be welcomed as a provision in future regulations. The want of a thoroughly sound, sanitary, durable jointless floor at a reasonable cost, suitable for the hard wear of our public chools, is much felt. The entire prohibitions of interior walls of uncovered brickwork, with their dust-collecting joints and uneven rough surfaces, however well coated, must give way to an impervious, hard, smooth cement material, and a glazed surface where there is any friction would appear to be a necessity for absolute cleanliness. For the future there is not sufficient information available at present to predict the extent of the coming changes; it may, however, be regarded as probable that the cheapening of school buildings will not find favour, nor be found possible, if suitable provision is to be made for altered and increased educational methods; that more spacious accommodation will be desired, on the lines of the more generous area provided in American school buildings, and that the raising the age of school attendance, with continuity for after study, will obviously require a departure in the former recognised arrangements.

Mr. Percy Morris, A.R.I.B.A. (Devon County Architect), said that with regard to the relation between the accommodation and the cost of the three types of schools the author mentioned, it was difficult to consider the schools collectively because on one hand the general conditions which governed them were so widely dissimilar and on the other the question was largely an economic one, but if they were willing to deal with them individually the difficulty to some extent disappeared. If they accepted the report with regard to cubicle contents in relation to the accommodation of the school they had at once a most valuable test in respect of the economy of the planning of a school, and if they took the test further and compared the ratio of cubicle contents below the floor area and above it they had a method of determination by a comparison of different schools as to what extent the excessive cost in any particular case was due to the circumstances of the site. That was a most important point when they were dealing with counties where level sites were almost unknown. He had worked out this theory lately and had a series of diagrams which were at the disposal of those present. The question of flexibility in working a school was a material difficulty but to some extent it could be overcome by a carefully compiled time-table. In Devon at present they were providing classrooms for forty and forty-eight, and were finding that this provided a considerable amount of flexibility in working the school at the top and bottom, where it was particularly required. He suggested the desirability of narrow classrooms both in point of efficiency and also for economy's sake. In point of efficiency because of the lighting and ventilation, and because the angle of view from the teacher's desk was decreased, while from the point of economy by having classrooms of about 20 ft. width they had the possibility of producing a series of classrooms in multiples of four, with a constant cubicle

ratio which was not the case when they were dealing with wider rooms because of the greater height required for lighting purposes. He believed considerable attention had been given to open-air schools in Wales and elsewhere, and in the near future he believed they would have to consider the possibility of throwing open the whole of one side of the classrooms on suitable occasions. An interesting suggestion was made in the report of the School Medical Officer of Derbyshire to warm the floors of the schools to a certain temperature, and then by the removal of the windows to produce conditions approximating to open-air schools. The principle was a good one, but there might be difficulties in putting it into practice. The idea was to blow live steam under the floors. They were all prepared to admit that if possible schools should be taken from the crowded areas. As to sites, in the main they were prepared to accept the recommendations of the Department Committee that the enlargement of buildings should not, except in exceptional circumstances, be allowed if it would result in the reduction of the playground below certain limits. Difficulties, however, arose with regard to this in the case of small country schools.

Mr. Pugh Jones (School Architect, County of Glamorgan)
said his county had a number of higher elementary schools in addition to elementary schools, and he had been responsible in the last few years for four new large schools of this type, and had prepared plans for others. In these schools he provided classrooms for forty children. He thought that a classroom should be for one class only. They were spending something like £140,000 and £150,000 a year on school buildings, and he was responsible for half the county. He did not think outdoor classes would be satisfactory in Glamorganshire for the principal complaints now were of cold rooms. They had provided covered playgrounds in nearly all the new schools and in suitable weather the children could be taught in them. If, however, they had good window space in which every window opened and good cross ventilation, it might be said that such rooms were equivalent to the open air. It was the simplest thing in the world to describe what kind of a site one should have, but they had to take what site they could get. He had had to go down 8 ft. on a site which was of peat and clay, and was very steep. Under such circumstances it was a ridiculous thing to compare the cost of schools in Glamorganshire and Middlesex. They had a school which cost them £9 or £10 per head before they reached the floor level. They found the greatest difficulty in getting sites at all, and the cost ran up to £1,000 an acre.

Mr. W. H. May (Plymouth)
asked what remedy the author suggested for getting over the stupendous difficulty of providing adequate playground accommodation for schools in large towns. A large mixed school in a congested town area necessitated a building of three floors, the boys being on the top. He thought it was detrimental physically to the children to have to constantly ascend these stairs.

Mr. Osborne Smith, F.R.I.B.A.,
congratulated the Section on having had the experience of two county architects, for generally it was difficult to get people to tell them of their experience with county schools. He did not agree with the author that they would get elasticity in schools by making smaller classrooms. The size fixed by the Board of Education was 10 ft. super. for each child, and they had not heard that this was too much. In his opinion it was much too little, and this was endorsed by the fact that in secondary schools the Board of Education required 18 ft., which was nearly double. Hence the more cleanly school children were allowed to sit further apart then the less wealthy and cleanly school children. From the point of view of health, which was, of course, the chief consideration at that Congress, this was a mistake altogether; and he would like to see the cases reversed and then they would soon find the standard raised. He agreed with Mr. Morris as to the width of classrooms. Mr. Pugh Jones raised the question of the cost of schools, and of the cost below the foundations. He had been round with Mr. Pugh Jones to some of the schools he had built. They were on the hillside, but he would suggest to Mr. Jones that he should adopt a plan which he adopted in the case of a boys' sanatorium on a hillside. He made a concrete table with legs; the legs at one end being, of course, longer than the other, and on the table he built his superstructure. It cost about a third which a brick foundation would have cost, and was on the lake-dwelling principle. When Mr. Pugh Jones talked of cost he would say that they were some of the most luxurious he had ever seen; with tiled dadoes and wood blocks and fireplaces with the grates 2 ft. wide; and some of the largest radiators he had ever seen. They could not get these things unless they paid for them. Mr. Pugh Jones had also got ventilators at the side of his windows so that if the teachers shut the windows there was still ventilation. All this accounted for the expense, but he agreed that it was wise expenditure.

Mr. Harbottle Reed, F.R.I.B.A.,
said there had been a lot of talk of open-air schools, but it did not seem to have progressed very far in this country. In Geneva they had French casement windows which enabled them to open practically the whole side of the rooms and in Rome they had portable desks, and the students took them out in the open-air for lessons.

Mr. Jerman,
in reply, said he confessed the paper covered too much ground, but this was due to the present chaotic state of their arrangements. As to playgrounds, he did not see why they should not utilise grounds near the school. Mr. Reed had referred to the open-air schools of Rome, but Rome was not Exeter or Glamorganshire. He wondered at them having any school buildings in Rome. He supposed the time would come when they would abolish school buildings in this country, and that would be a bad thing for architects.

Architects' Grievance against Model By-Laws.

Mr. H. D. Searles-Wood, F.R.I.B.A., in a paper on this subject, took the papers of Mr. William Woodward, read at the Surveyors' Institution, and Mr. Voysey, before the British Constitutional Association, and discussed the grievances referred to by those gentlemen against the model by-laws. [Summaries of both these papers were published in the *Builder* at the times they were read.] Mr. Woodward's suggestion was to set up in each town an office (it might be the office of the architect or surveyor), which should be open every day at stated hours, for the examination of drawings and specifications for new dwellings for the working-classes; it would not take an architect long to see that these drawings and specifications represented dwellings which, for planning and specification, were suitable and proper, and would secure healthy dwellings. To provide for the settlement of disputes a tribunal should be instituted in each town, before whom builders and architects should appear; the tribunal should consist of three men: one an architect, one a surveyor, and one a builder, each of good repute and of high standing; and the decision of this tribunal should be final and binding on all parties. It all came back to this, that whatever they called them, by-laws or regulations, it was impossible to go on without some guidance, and that left the two grievances of the administration of the laws and the deposit of plans. He (Mr. Searles-Wood) ventured to suggest that the feeling that appeared to exist between architects and officials was due largely to want of knowledge on both sides. Many officials did ask for absurd things to be done owing to the way in which they construed their by-laws, and many architects designed their buildings without the slightest regard to the by-laws of the district, often not having taken the trouble to get a copy of them before designing the building; but he thought that this friction was much less than it was. Officials were fast becoming better trained in their work, and approached the architect with much more sympathy, and architects were learning to respect the official who could so often help him over a difficulty. With regard to the deposit of plans the real grievance was that the architects thought that their plans were used for other purposes than seeing that the particular building complied with the by-laws, and that their designs were used by the officials in preparing drawings for their council buildings. He had heard of instances where copies of plans had been obtained from the deposited plans, and houses built from them by unscrupulous builders. Mr. Voysey urged the abolition of the existing by-laws and the appointment in their stead of qualified officials, whose duty it should be to report to their council when any building was proposed that, in their opinion, would be dangerous to life, or limit or infringe on the liberty of others. Then let it be made a criminal offence on the part of the owner of any building which could be shown to have caused injury. The owner, if made responsible, would be elevated and not degraded by his increased sense of responsibility.

The Royal Institute of British Architects' report referred to by Mr. Woodward stated: "It appears to the committee that no model by-laws can be considered complete which do not include those to be enforced by local authorities with respect to the staircase and exits of public buildings and factories, even though authorised otherwise than under the Public Health Acts. It is of great importance that the requirements of the local authorities as to the deposit of drawings should be reasonable, and that they should be stated. The committee suggest that in all cases a block plan with the lines and depth of drainage shown thereon, together with the nearest public roadway and adjoining premises within 100 ft. of the proposed building, should be deposited, and that when required plans and sections (together with elevations if needful to explain methods of construction) should be submitted for inspection during a definite and limited time, which drawings should be then returned stamped if approved, or if not approved accompanied by a precise statement of the particulars in which the by-laws have not been complied with. If would be of great advantage if an appeal could be provided to a technical authority as to the meaning and applicability of the by-law."

This report was presented in 1904, and the outcome of it was the modified model by-laws for rural districts, that closely followed the lines of the report; but nothing had been done in respect to the tribunal of appeal, and he ventured to suggest, in spite of Mr. Woodward and Mr. Voysey, that the best tribunal would be the Local Government Board. In the event of a difference of opinion arising between the authority and the building owner as to the suitability of his design and the construction of the by-laws, the building owner should forward his drawings to the Local Government Board with a statement of the argument he put forward why the local authority should pass them, and the local authority should state their reasons for objecting; the decision of the Local Government Board should be binding on all parties, and, so far as he could see, there should be no reason why the matter should not be dealt with promptly and with little trouble. He was aware that the Local Government Board always declined to give a legal interpretation, as that was a matter that the courts must settle, but this reference that he suggested would, in most cases, be as to the reasonableness of the objective, and would not necessarily involve the legal construction of the by-law, but simply the usual reading of it, with which the Local Government Board would be quite familiar. It appeared to him that such a tribunal would be more impartial than any tribunal formed in the way suggested by Mr. Woodward, and the decision of the Local Government Board would, in course of time, form a series of precedents which would be of great assistance to both local authorities and building owners. He moved "That the Council of the Royal Sanitary Institute be requested to urge on the Local Government Board the desirability of the establishment by the Board of a tribunal of appeal from the decision of local authorities on points relating to practice in the working of the Building By-laws, and should they consider that Parliamentary sanction is necessary for the formation of such a tribunal, to take steps to obtain such sanction."

Mr. Lacey (Borough Surveyor, Oswestry),
in seconding the resolution, said he did not see why there should be any feeling of irritation on the part of architects to submitting plans. It was laid down by the law that the local authority was to approve or disapprove of the plans, therefore plans must be deposited. It seemed to him that the grievance was not so much against the by-laws as against the officials who had to administer the laws, and that might be passed over after the expression of opinion of Mr. Searles-Wood. He could not see how the by-laws could have any restrictive effect on design. If it had they would not

have the magnificent public buildings they saw or the domestic architecture which was so much admired at the present time. Mr. Macmorren, who was a notable authority, had stated that the whole of the by-laws required revision from beginning to end and also that they required revision by professional experts who knew where the shoe pinched. But was that not going too far? It looked as if there were corns on every toe of these gentlemen, and if that was so it seemed rather a reflection on them that the law was allowed to get to such a condition that the boots became so uncomfortable. But when they came to consider the fundamentals of the by-laws, he asked if 9-in. external and party-walls were too much, if the laws governing the thickness of the walls were oppressive; was not the necessity for good foundations incontrovertible? Were the regulations for air space too liberal, or the methods with regard to drainage too drastic? He thought no objection could be taken to them. He did not agree with Mr. Woodward, and to say that all regulations should be done away with was a debased form of Socialism. He did not like the suggestion that plans were utilised by public officials, and he thought as a rule that public officials were as conscientious in regard to their employers as the architect was to his client. Mention had been made of the rows of hideous streets, but that was due not to the by-laws but to the desire from the speculative point of view to crowd houses together and get as much profit as possible out of the land.

Mr. E. T. Hall, F.R.I.B.A.,
said the last speaker had asked why they should not have a 9-in. wall. Well, why should they? Why not have a reinforced concrete wall 3 in. thick? It would cost less and be as good. The difficulty was that once they said a wall must be made of this or that thickness all further inventions were stopped. Then in many cases they had the size of joists specified, and he knew cases where the size was ridiculously excessive. Then why of necessity be wood floors. They might be reinforced floors which would be cheaper in districts where there was plenty of gravel, and difficulty was experienced in getting imported wood. The great aim nowadays was to get cheap houses for people earning a small wage, and they could not possibly do that if they had to comply with the by-laws in certain districts. The great object of by-laws should be to lay down principles in respect of healthy conditions, but otherwise there should be an encouragement of the erection of houses at such a cost that the poorest could pay the rent. If they could have a revision of the by-laws so that they could deal with principles rather than details it would be a great benefit. It was said there was always some wicked jerry-builder who would do something wrong, and therefore they must lay down detailed by-laws, but if that was so, under the resolution there would be a tribunal of appeal. It would in this way fall in with the actual practice in Scotland of the Dean of Guild Court, which was a technical body always dealing with plans. In London they had a tribunal of appeal which was largely used, and he believed in practically every case the result was satisfactory because they took a common-sense view of matters, and where a regulation was inapplicable they simply waived it. He was putting up a very large building in the North, and put in pipes of 3½ in. diameter. The local by-laws required that they should be of 4 in., and they were told to make alterations which would have cost £700. He went before the Committee of the Corporation and was able to convince them that what he was doing was infinitely more sanitary and was in accordance with the practice of many large towns. It went to show that by-laws were often too rigid, and a tribunal of appeal in such a case would have taken the common-sense view.

Mr. Kaye Parry (Dublin)
pointed out that as a rule the plans came before an engineer who had had no architectural training, and he looked at them with the eye of a civil engineer, and from his point of view took exception to things which the architect with his training considered quite legitimate, and would be able successfully to defend if permitted to do so. In Ireland they generally got over the difficulty by appealing from the surveyor to the Council, and if they made a good case the Council generally waived the by-laws. In Dublin, however, they had in addition to the City Surveyor also a City Architect, who was a Fellow of the Royal Institute of British Architects, and was a man for whom they had the greatest esteem. That gentleman reported on all plans sent in, and he approached the task with a sympathetic mind and with the desire to meet the architect in every way possible consistent with doing his duty. If they had a similar official in other places a great deal of the present friction would be overcome.

Mr. Redfern (Surveyor to Honiton Rural District Council)
opposed the resolution which he considered extremely disrespectful to surveyors, and a challenge to them on the part of the architectural profession. If Mr. Hall had approached the surveyor in the first place with regard to the 3½-in. pipes there would have been no trouble or friction.

Mr. Hall: That was done.

Mr. Redfern said he meant in the way of consulting with the surveyor. If they consulted the surveyor on such points they generally found that matters could be satisfactorily arranged.

The Chairman: You must remember that the by-laws are cast-iron. The surveyor has no more power to alter the by-laws than I have.

Mr. Redfern said if they took the by-laws of the Local Government Board they had some ground to go upon, and it was his firm opinion that the rural by-laws were in no way burdensome to the architectural profession or to anyone who wanted to build. In the twenty-six villages in his district there were building by-laws in only four of them, and the result was that buildings were put up which were neither safe nor healthy, and which in a few years' time would cause considerable trouble. They had to remember that surveyors had not only professional architects to deal with but also the jerry-builder intent on saving every penny, and unless they had something down in black and white which they could stand on the surveyor was all over the place. If they had a tribunal of appeal it would be such men who would take advantage of it with the object of getting a little more out of his speculation, and the surveyor would always be in trouble. If every man who sent in plans was a qualified architect, it would be all right, but the majority of plans they got for working-class dwellings came from the builders.

Mr. Munce (Belfast) thought surveyors had too much work to do than to look through hundreds of plans to find something which would suit themselves.

Mr. Brodie (Blackpool) remarked that as surveyors they would be quite satisfied with going to their old friends the Quarter Sessions.

The Chairman
said he was a surveyor for many years, and there was still confusion about this by-laws question. Many members of local authorities thought the by-laws were elastic, and that they could give way on them, but it was absolutely illegal to do anything of the kind. A by-law was a by-law which had to be enforced. The by-laws themselves were thirty years old, and were practically founded on the Great Fire of London, and were aimed at the prevention of fire more than anything else, and in the interests of the fire insurance companies. The sooner someone could get to work to remodel the model by-laws and have the whole Acts of Parliament altered with regard to them the better. A vast number of alterations in building had taken place since the laws were passed.

The resolution was carried.

Training of Engineers.

Professor J. Radcliffe discussed the "Training of Engineers engaged on work associated with Sanitation," and divided the training into four parts, viz., (*a*) General Education; (*b*) A Sound Knowledge of the Fundamental Principles of Engineering; (*c*) Specialisation; (*d*) Practical Experience. He laid great emphasis on the importance of students being able to enter the offices of the chief engineers of authorities who had in hand the administration of enterprises dealing with the maintenance of public health, and appealed to local authorities to give the necessary facilities.

Mr. Searles-Wood, F.R.I.B.A.,
considered the suggestion one which required careful consideration. His experience as an examiner was that as a rule the candidates who presented themselves for examination had little initiative. If they could have a class for cultivating common sense it would be a desirable thing.

Sewage Matters.

Eight papers were read dealing with various points arising in the problem of sewage disposal, viz., (1) "The Disposal of Sewage from the Districts situated at or near the Coast of the Bristol Channel, from the River Usk to Lavernock Point," by Professor E. A. Letts, D.Sc. (Belfast); (2) "The Occurrence of the Fresh Water Alga Prasiola Crispa on Contact Beds, and its Resemblances to the Green Seaweed Ulva Latissima," by Professor E. A. Letts, D.Sc. (Belfast); (3) "The Evolution of Sewage Disposal," by A. J. Martin, M.Inst.C.E. (London). (4) "Chemical Precipitation at Sewage Disposal Works, Wakefield," by J. P. Wakeford, Assoc.M.Inst.C.E. (Wakefield); (5) "The Chemical and Bacterial Condition of Rivers Above and Below the Sewage Effluent Outfall," by J. E. Purvis, M.A., and A. E. Rayner, M.A., M.B. (Cambridge); (6) "Land Filtration Effluents," by W. Clifford, Assoc. M.Inst.C.E. (Wolverhampton); (7) "The Functions of the Non-Bacterial Population of the 'Bacteria Bed,'" by J. Crabtree, B.Sc., introduced by G. J. Fowler, D.Sc. (Manchester); (8) "Preliminary Note on the Bacterial Clarification of Sewage," by G. J. Fowler, D.Sc., and E. M. Mumford, M.Sc. (Manchester).

The most important of the papers was that of Professor Fowler, who has been engaged in investigations in the laboratory at Manchester University with the object of obtaining a thoroughly clarified effluent without the use of large quantities of chemicals and with the minimum production of sludge. Mr. Mumford had occasion, in regard to another matter, to study the reactions of an organism occurring in nature in pit-water impregnated with iron. This organism, which for convenience has been designated M7, is a true facultative organism, preferably an aërobe, and exercises a specific action on iron solutions. The action of the bacillus on iron solutions proceeds in two stages, in which the aërobic and anaërobic actions appear to be symbiotic, at any rate, under the conditions occurring in nature. The process by which it is proposed to clarify sewage is in the first place to remove the grosser solids, either in a plain sedimentation tank, an Emscher tank, or a Dibdin slate bed, in such a manner, i.e., as shall give rise to the least amount of putrefactive change in the liquid portion of the sewage. The effluent from this preliminary process would be led into a second tank, where it is inoculated with the organism, a small dose of ferric salt is added, and air blown through till clarification sets in. A period of settlement is then allowed for precipitation of the coagulated matter, and eventually the clear liquid is run off, either for rapid final filtration or for direct discharge into the stream. The precise mode of action of the organism is not yet fully worked out.

A long discussion ensued, which centred a good deal round Professor Fowler's paper, which the Chairman described as a remarkable one, and for which they owed a great deal of gratitude to the author for bringing forward in the preliminary stages of his work.

Professor Fowler
said that if the experiments were completely successful they could deal with the sewage of Manchester on half their present disposal area and have an effluent which was crystal clear.

The following resolution was carried on the motion of Professor Fowler seconded by Mr. A. J. Martin: "That the Council of the Royal Sanitary Institute be requested to urge his Majesty's Government to take steps to carry into effect the recommendation of the Royal Commission on Sewage Disposal that provision should be made for the systematic study of purification processes, which recommendation this Congress welcomes in view of the complexity of the questions involved in the purification of sewage and the importance of a correct understanding of purification processes."

CORRESPONDENCE.

A Ministry of Fine Arts.

SIR,—I would gladly support a movement in favour of the creation of a Ministry of Fine Arts in this country, as I believe that it would have far-reaching beneficial effects.

ROBERT DONALD
(Editor *Daily Chronicle*, London).

SIR,—The proposed Ministry of Fine Arts in this country has my fullest support.

R. D. BLUMENFELD
(Editor *Daily Express*, London).

SIR,—I am quite of the opinion that we ought to have a Minister of Fine Arts.

GEORGE CLAUSEN, R.A.

SIR,—I am just leaving town and am too much pressed for time to give an adequate expression of opinion regarding a Ministry of the Fine Arts.

I may, however, say that I do not think that it would in any possible manner benefit the cause of art in this country, and yet I fancy it might impede it. It would involve another leap into the entanglements of what Lord Salisbury called "the interference of your grandmother, the State"; and if there is one thing more than another that she is unfitted to give an opinion upon it is any art question. When one considers the constant State interference of to-day and the potent harm that it is occasioning in many directions, one may well hope that art, which is born of freedom, may for at least a few years longer be saved from the net of officialism which is closing, if it has not already closed, over most other callings in this country. Regretting that I cannot sympathise or support this scheme.

BRITON RIVIERE, R.A.

SIR,—I am glad to see the interest you are taking in the formation of a Ministry of Fine Art. I have long advocated it, and am happy to see the necessity for it being now generally felt, and likely ere long to be realised.

DAVID MURRAY, R.A.

SIR,—It would certainly be a great advantage to artists to have some Minister who would look after their interests in Parliament. At the same time we must be left as free as we are now. It would not do to set up a power which might act as an additional barrier which the artist must overcome before he can carry out his ideas. BERTRAM MACKENNAL, A.R.A.

SIR,—I certainly think that a Board or Ministry of Fine Arts is an object to be striven after in spite of its obvious dangers. The latter appear to be:—

1. Its probable political character—a non-political Committee with a Parliamentary mouthpiece would appear to be the safest scheme.

2. The danger of an unsuitable autocrat being placed in control. Other countries have suffered in this direction—a "director of the ballet" being appointed in one case.

3.—The antithesis of what is desirable would be caused by a possible grafting of the suggested New Office upon the present Office of Works. It is obvious that a department for the encouragement and direction of the fine arts only is required, not one for its manufacture.

The present Office of Works has, I believe, a great staff engaged in fabricating so-called architecture with future possible ramifications to other branches of the fine arts.

The Imperial Arts League is already discussing the subject generally with a view to public action. I am sure its Council would be delighted to co-operate with you in the matter.

W. ROBERT COLTON, A.R.A.

SIR,—I am in favour of the creation of some authority with power to review, at any rate, from the best side, proposals for the alterations of our streets and buildings, though how that authority should be constituted, whether official or otherwise, requires serious consideration.

I brought the matter before the Institute when I was President, and at the request of the Council of that time it was laid before the Government by Lord Plymouth, then First Commissioner of Works, but as far as I know nothing further has been heard of it.

ASTON WEBB, R.A.

SIR,—I am not a believer in State interference with the arts, but I may be wrong, and am quite open to conviction.

THOS. G. JACKSON, R.A.

SIR,—I have for many years past advocated a Minister of Fine Arts, with an Advisory Committee, and during my presidency at the Institute, and by letters in the *Times*, I have given my views on the subject, so that such a movement as you propose would certainly have my sympathy. JOHN BELCHER, R.A.

SIR,—The need for a Ministry of Fine Arts is now receiving such general recognition that I feel its establishment can only be a question of time.

When the question of instituting such a department arose some two years back I expressed myself as strongly in favour of the proposal, and pointed out the important place that architecture would take in it.

The control of national and historic monuments and of the artistic aspects in the case of Imperial and Municipal improvements are pre-eminently architectural questions. Of course there are demands for other forms of expert knowledge in the treatment of the nation's varied artistic treasures, the value of these for the educational purposes, and varied activities of this nature; but it would appear that, taking everything into consideration, the architectural section of the department would be the predominant one.

The work of a Ministry of Fine Arts differs in character from that of the other types of Government department and the "personnel" should provide for the inclusion of all the leading men in the arts and artistic professions, as distinct from the usual arrangement of an official staff. Much can be learnt from the methods of other European countries in this respect.

H. V. LANCHESTER
(Vice-President, R.I.B.A.).

SIR,—I have read your appeal with regard to the formation of a Ministry of Fine Arts in this country to readers of the *Builder*, and beg to state that I am heartily in support of the movement which you have inaugurated.

K. M. B. CROSS, B.A.
Gonville and Caius College,
Cambridge.

SIR,—I am in full sympathy with you in the above matter, and have read with much interest the appeal to your readers in the last issue of the *Builder*.

There can be no doubt that art matters in this country have not received the attention and support which they ought to receive. I shall personally be glad to give my fullest support to your proposition, namely, the formation of a Ministry of Fine Arts for this country on the lines of those which exist in France and Germany.

In the North of England, perhaps especially, the progress of art is treated with an indifference which is most depressing to all those concerned in the progress of art matters, and nearly everything which concerns art is sacrificed to commercialism and science. This neglect cannot but have a most serious and deteriorating result on the future welfare of the country generally, and on the character of its people, and it certainly calls for immediate attention with a view to a possible remedy.

JOHN BROOKE, F.R.I.B.A.
(President Manchester Society of Architects).

SIR,—I think it is desirable that there should be a Ministry of Fine Arts in this country, and the movement has my sympathy and would have my support if there seemed reasonable likelihood of its being taken up in influential quarters by the Government.

Sheffield. J. B. MITCHELL-WITHERS
(Past President of Sheffield Society of Architects).

SIR,—I do not know what other countries have done in this way, but certainly anything that will promote fine arts would have my sympathy and support. W. MILBURN
(President Northern Society of Architects).

SIR,—I have read the appeal you make in the leading article in your issue of the 18th inst. with reference to the creating of a Ministry of Fine Arts in this country; and I think that some such body should be created, which might attain the same excellent objects as those attained in Paris. Everything, however, would depend upon the character of the body to be entrusted with such important functions; and the greatest possible care should be taken to exclude mere high sounding officials not perhaps thoroughly acquainted with the details of the subjects which would be brought before them, nor with the ultimate effect of schemes which they would have to consider in the first instance on paper only. WM. WOODWARD.

SIR,—I have read your appeal with regard to the formation of a Ministry of Fine Arts in this country to the readers of the *Builder*, and beg to state that I am entirely in support of the movement which you have inaugurated.

A. B. GOODBODY, B.A.
Gonville and Caius College,
Cambridge.

SIR,—I am greatly in sympathy with your movement for the creation of a Ministry of Fine Arts in this country. This is a step which should have been taken years ago.

A Minister of Fine Arts should be appointed irrespective of party, and a capable man in this position should not be subject to removal owing to the political aspect of the country changing. SEPTIMUS WARWICK.

SIR,—I have not considered the question of the creation of a Ministry of the Fine Arts with any care so far, nor have I had the opportunity of discussing it with friends, but *prima facie* a movement to further the formation of such an office seems certainly worthy of support.

A provisional committee would be in a position to get the experience of foreign countries, which would help them in guiding public opinion in the matter. J. A. GOTCH.
Kettering.

SIR,—I have read with the greatest interest your leading article of July 11 in which you so ably put the case for the formation of a Ministry of Fine Arts in this country. I am very pleased to see that you are prepared to take the matter up actively, and to receive the names of any who are prepared to co-operate with you.

In my opinion good architecture is not only of educational and artistic value but is also a national asset of practical and commercial value. There is no necessity for me to labour the point. I shall be pleased personally to give you every possible assistance and support, and the Society of Architects as a body will, I know, be prepared also to support the proposal and to nominate representatives to serve on any Committee which may be formed.

C. MCARTHUR BUTLER
(Secretary Society of Architects).

SIR,—The recent articles which have appeared in the *Builder* on the desirability of creating a Ministry of Fine Arts raise a point of real interest to architects and, incidentally, also to the general public.

As you point out in your leading article of the 11th inst., "every modern country except England has its Ministry of Fine Arts."

In France, the Department of Fine Arts is presided over by an Under-Secretary of State, and it is due to the fact that this official keeps in constant touch with all manifestations of contemporary art in France, both personally and by the advice of a thoroughly efficient permanent staff, that State patronage is an effective means of encouraging art in that country.

But it seems to me that we cannot attempt to achieve in England an equally successful result by following the same means, as, owing to the peculiar political equilibrium of our system of government, such a post as that of Under-Secretary of State for the Fine Arts would be awarded to some young politician as a stepping-stone to a possible Cabinet appointment, and quite irrespective of any special knowledge of the subject which he might possess; it is more than probable, therefore, that the gentleman who succeeded in getting appointed to the post would be ignorant of the essential characteristics of good art and its difference from blatant vulgarity. So that our last state would be much worse than the first. For this and other reasons related thereto, I think every patriotic Englishman and every true artist who has the wonderful possibilities of English art in view, must welcome your suggestion of a committee to consider the whole question. The appointment of such a committee would, in itself, be an important step, and would, I feel sure, do much to rouse public interest in the question of the undeserved neglect of the arts by our Government, which is a source of astonishment to all our brother artists abroad. The committee might incidentally perform a valuable work in the collection of data relating to the working of the various Ministries of Fine Arts in such

countries as France, Austria, Italy, Germany, etc., and this information could be published in due course either in your columns or as a pamphlet. Such authoritative information would be extremely useful to masters, students, and the more intelligent section of the general public. It would also have an important influence on the course which the committee decided to adopt if at the same time opinions from architects, sculptors, and painters in foreign countries, on the effect of State control and patronage, were invited and considered by the committee.

P. CART DE LAFONTAINE.

*** We have received many other letters on the subject, but are compelled to hold them over until next week for want of space.—ED.

Exeter Hostel.

SIR,—If the premiated designs are the best of the large number sent in, it would appear that either the competitors have failed to avoid some undesirable arrangement or that the assessor considered them of no importance.

You call attention to borrowed light for the housemaid's room, and other points that are certainly not up to date. It should be noticed that a number of bedrooms would have no sun; the headmaster's house is near the kitchen block, and his study overlooks scullery, etc.!

Some of the quarters and offices are located far from their work; in one case the serving approach to dining-room crosses an important corridor. Access to tradesmen's entrance involves passing students' entrances, etc.

Surely some of the competitors were alive to these and other details, and one is curious to see if among so many designs a few could not be found with better arrangements. CRITIC.

Welsh Memorial to King Edward VII.

SIR,—It now transpires, unless I am incorrectly informed, that it is the intention of the authorities to place the designing of the sanatoria in the hands of a well-known architect, a Fellow of the R.I.B.A., etc. If this is so, it will be interesting to know what the Council of the R.I.B.A. has to say to the Committee, in addition to what the professional assessor thinks of the matter, as remarked by your correspondent "Competitor."

The whole matter needs a searching investigation, so that the profession may be satisfied that it has been treated with courtesy and fairness, and also to show that the Council of the R.I.B.A. has been reasonably alert.

My statement that the exact site must be known, etc., has proved very much to the point, as it was not until definite land had been procured that the architect referred to above propounded his scheme of building, so far as my knowledge goes.

There may be many curious sidelights to be thrown on the whole business.

I rather flatter myself now on the restraint (?) I displayed when the competition was announced, and as my gray hairs grow less in number I am the more satisfied that playing golf or even bridge is more profitable for an architect than slaving away at competitions which so often prove a source of weary regret to the ninety-nine and an endless worry to the lucky (?) winner. WELSHMAN.

Sub-Contractors.

SIR,—Your correspondent "G." under the above heading writes:—"Unquestionably on the Institute contract all sub-contractors' payments should be at the same terms of payment as the Builders' contract and subject to '*exactly*' the same retention."

Clause 20, "Sub-Contractors' Institute Schedule of Conditions," which appears to be the clause referred to, uses the words "terms and conditions consistent with" and not "*exactly* the same as," and in suggesting a remedy "G." also uses "consistent."

That there should be a retention from the sub-contractors is only fair, and that it should be clearly stated by the architect to the sub-contractors is essential, but the terms should "be consistent with" the main contract and not "exactly the same."

While in practice the retention on the main contract and sub-contracts might be worked as the same, it does not prove that this course is consistent, and it certainly is not so when it becomes a question of the "*time*" of retention.

Your correspondent bases his complaint on the fact that architects pay sub-contractors in full long before the contract is terminated. Surely this is entirely a question of when the sub-contractor appears on the work. If the sub-contractor is early on the job and early off it there can be no reason why he should wait until the completion of the whole work before his retention is paid him.

To be "consistent" the retention time to the main and sub-contractors' contract should be in proportion to the amounts of the two estimates for same.

Thus, in practice, if an architect retains the sub-contractors' retention for, say, one or two certificates after paying for the remainder of the work (according to the amount of certificate and the size of the work) and then pays it, it cannot be any injustice to the contractor even though it may be long before the whole contract is complete.

The whole of this letter appears admittedly a defence of the sub-contractor, but it is only based on the points raised in "G.'s" letter, which itself merely touches the fringe of perhaps the most vexed question in the building trade at the present time, namely: the position and rights of the client, architect, and general contractor as regards sub-contracts. A. W. D.

Flueless Geysers.

SIR,—We were glad to see the letter from Messrs. Thomas Chapman & Son in your issue of July 4, as it gives us an opportunity of dealing more fully with a matter which is of considerable interest to the industry.

Messrs. Chapman state that they are unable to understand on what grounds our "sweeping condemnation of flueless heaters can be justified," and refer to the fact that we have not accepted their offer to submit one of their heaters for our test.

In a letter which I addressed to them the Executive Committee's opinion was stated in a perfectly clear manner. It may be briefly stated as being that no water-heater consuming 80 cubic ft. of gas per hour, however constructed, can be used without a flue in a confined space, such as a bathroom generally is, without risk to the occupants.

It is interesting to point out that, in the official test of their apparatus, as reported on page 12 of Messrs. Chapman's official catalogue, it is stated that the window in the bathroom in which the heater was tested "was lowered two inches." This is really the important point in the whole discussion, and our Executive consider that in the best interests, not only of the general public, but of gas suppliers and appliance makers, every possibility of accident should be eliminated, and apparatus made as "fool proof" as possible.

W. M. MASON, Secretary,
British Commercial Gas Association.
47, *Victoria-street, London, S.W.*

Gas Water Heaters.

We have received from Messrs. Thomas Chapman & Son a letter in the course of which they say:—

"We do not understand the object of Messrs. Ewart & Son's letter in your issue of the 11th inst., as the principal points raised therein are the very ones dealt with by our letter in your previous issue, which was in turn called forth by one from the Commercial Gas Association.

It is no part of our policy to condemn the manufactures of other firms. Our efforts are fully occupied in dealing with the demand for our own, and we repeat with confidence the statement made in our various advertisements, to the effect that the appliance we sell, viz., the "Record" water heater (Hammond's patent), may be safely used in an ordinary bathroom without a flue or other means of special ventilation.

The justice of our claim is supported by the testimony of experts who have thoroughly tested our heater."

*** A letter on "Registration Obscurity," from Mr. E. J. Dixon, is unavoidably held over.—ED.

L'HOTEL DE SULLY, PARIS.

This fine old mansion in the Rue St. Antoine, famed for its sculptural decoration, has been acquired by M. Charles Normand, President of the Society of the Amis des Monuments Parisiens, and the Society's collections are being arranged therein. Numerous interesting relics of old Paris, gathered during the recent alterations made for laying out the Boulevard Raspail, have been added to the museum in its new home, where M. Normand will reside as curator.

COMPETITION NEWS.

It must be understood that the following paragraphs are printed as news, and not as advertisements; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current Competitions is printed on page 102.

Devonport Municipal Buildings.

The names of the authors of the designs placed first, second, and third are as follows:—First: Messrs. Ashley & Newman, 14, Gray's Inn-square, London, W.C.; second: Messrs. Harris & Moodie, 8, New-square, Lincoln's Inn, W.C.; third: Messrs. Knott & Collins, Adelphi-terrace House, Adelphi. There was a private view of the designs on the 21st inst., from 10 a.m. to 5 p.m., and a public exhibition from 3 p.m. to 8 p.m. on the following seven days (Sunday excepted). Mr. Ernest Newton, A.R.A., F.R.I.B.A., was the assessor.

Blackburn's Fire Station.

The Blackburn Corporation are offering to architects premiums of £100, £50, and £25 for the best three designs for the proposed new fire-brigade station and firemen's dwellings on the Wrangling, the competition being confined to architects having an office within the borough. The cost of the cottages is not to exceed £300 each. Mr. Frank Gatley Briggs, F.R.I.B.A. (of the firm of Messrs. Briggs, Wolstenholme, & Thornely) has been appointed assessor.

School, Warrington.

At a meeting of the Sites and Buildings Committee, it was resolved that a public architectural competition be held for the planning of the school to be erected on the site in Lovely-lane; and that the Surveyor and the Director of Education be instructed to prepare, for submission to the Committee at their next meeting, the draft conditions of the competition.

MAGAZINES AND REVIEWS.

THE *Burlington Magazine* for July contains a charming unpublished drawing by Ingres of two girls, and an article of the Sources of Design in Italian Majolica, by Bernard Rackham. Coptic Miniatures in Egyptian Churches and Monasteries are dealt with in an article by H.R.H. John George Duke of Saxony, while the Representation of Movement in Art is treated by Martin Alder.

The first part of an article on Sassetta between 1423 and 1433, by Giacomo de Nicola, gives the results of lengthy researches concerning the finest Sienese painter of the fifteenth century.

A first paper on the Mitre and Tiara in Heraldy, and Ornament, by Egerton Beck, and the Manafi-i Neiwan, or Description of Animals, an early Persian manuscript, of which various illustrations, including a wonderfully coloured picture of two elephants, are illustrated.

The tenth article on Early Furniture, by Aymer Vallance, and a review of the Catalogue of the Munich Exhibition of Mussulman Art, also form part of the number.

The month's number of the *Connoisseur* contains an article on the Walker Art Gallery, Liverpool, illustrated by examples of the works of Caddick, Watts, Dow, Hunter, and Val Prinsep.

An interesting Seventeenth-Century Pocket-Book forms the subject of a paper by Bohun Lynch. The Liverpool Free Art Museum is described by Joseph A. Clubb, D.Sc., its Curator, Sulgrave Manor, the ancestral home of the Washington family, by Claude V. White, and the usual Notes and Sale Room matter are also parts of the number.

The colour illustrations of Mrs. Morland, by George Morland, and the Virgin, St. Elizabeth, St. John, and the Child Jesus, by Rubens, are finely reproduced; and we notice with pleasure the photograph of the very fine stained-glass window for the Cathedral of St. John the Divine, which is given in the "Current Art Notes."

The current number of the *Studio* is well up to its usual reputation, and will be noticed in our next issue.

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We were loyally seconded by the photographer, who brought us at ten o'clock samples of his skill in photographs of all the premiated designs.

While, however, snatching a few minutes for necessary sustenance before our departure at midnight, some evilly disposed person stole the greatest weapons in our armoury in the shape of our photographs, and the plates which appear are the result of the unwearying efforts of photographer and lithographer to repair in an interval of time all too short the havoc made by crime; and, if the result fails to satisfy our readers, this is not due to any lack of skill on our lithographers' part; indeed, they have almost done the impossible in producing the plates at all in the time given. We cannot, like a contemporary whom we esteem, continually boast of being first in the field, our merits may not be as great, but we estimate modesty as not being incompatible with good breeding. We will, however, try what we can do to emulate our contemporary's energy, and hope to profit by their example!

Exeter Hostel.

THE conditions were adhered to as closely as possible, particularly with regard to the separation of the blocks and the accommodation required on each floor.

The professor's house being one of the governing factors in the planning, this was arranged at the high level in close proximity for students and staff, and at the same time it is served from the same trades road at the rear as the hostel, thus avoiding a multiplicity of approaches. In the main block simplicity has been the keynote, with the various staircases arranged near the entrances and on the axial lines of corridors.

Externally the buildings will be faced with multi-coloured sand stock bricks with stone dressings, and a cornice of wood. Roofs will be covered with Delabole slates.

Internally the finish will be simple, consistent with other buildings of this class, and as far as possible the construction will be fireproof. Messrs. Garratt & Simister, Congreve-street, Birmingham, are the architects.

MEETINGS.

TUESDAY, JULY 29.

London Master Builders' Association.—Annual dinner at the Hôtel Métropole to meet the members of the Executive Council of the National Federation of Building Trades Employers of Great Britain and Ireland. 6.30 p.m.

TUESDAY, JULY 29, AND WEDNESDAY, JULY 30.

The Institution of Mechanical Engineers.—Meeting at Cambridge.

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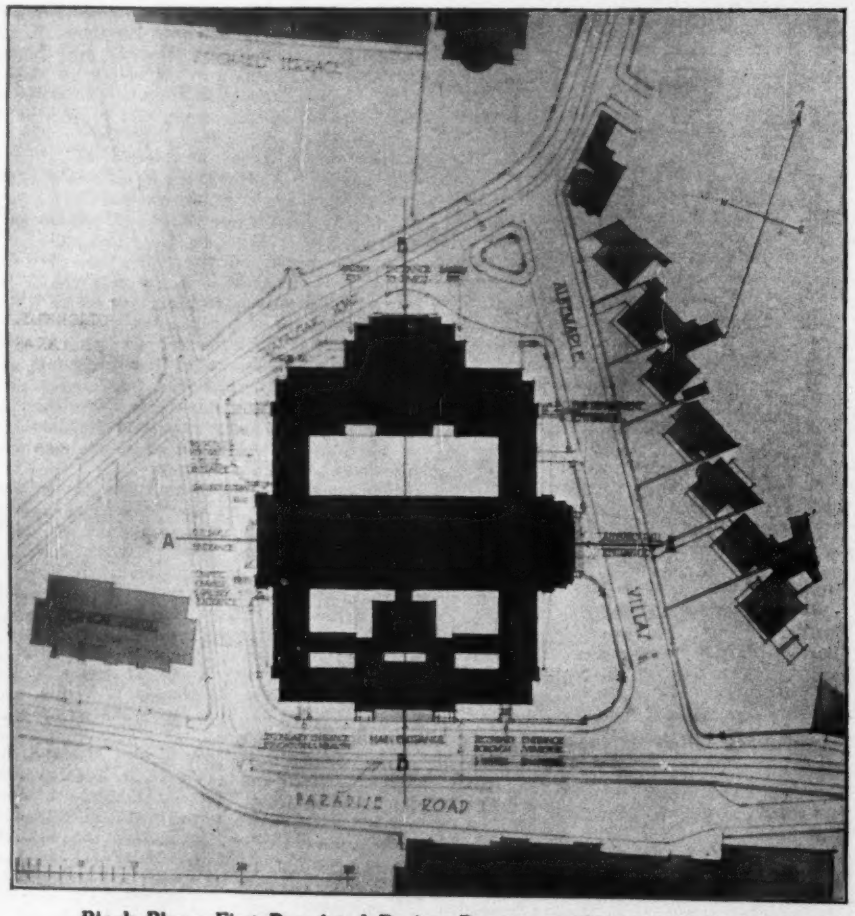

Block Plan: First Premiated Design, Devonport Municipal Buildings.
Messrs. Ashley & Newman, Architects.

GENERAL NEWS.

Professional Announcement.

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The Royal Institute of British Architects: Board of Architectural Education.

The Board of Architectural Education of the Royal Institute of British Architects announce that the designs submitted by the following students are who qualifying for the final examination have been approved:—

SUBJECT VIII.

Design for a Carriage Entrance.

P. D. Bennett.

SUBJECT IX.

Design for a Bank.

H. L. Charles	J. J. Nathanielz
W. T. S. Foster	C. H. Wright
E. Fincham	H. T. Cooksey
W. R. Davison	C. H. Woodhouse
J. E. Marchinton	C. Ripley
H. E. Crossland	J. O Thompson
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I. Omar	B. Newboult
J. O. Cheadle	E. R. F. Cole
E. A. L Martyn	A. Thorpe
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Design for a Monument Containing One or More Fountains.

R. Braine	R. S. Wallace
W. W. Locke	J. S. Hodges
A. S. Burnett	J. E. Lutyens
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H. J. Tebbutt	A. F. Hooper
H. Dicksee	J. Macgregor
F. A. Addey	J. C. Fowell
F. Jenkins	F. O. Lawrence
R. S. Dixon	G. Davidson

Drawings for Public Schools.

In connection with the breaking-up ceremony of the Architectural Association Schools a selection of drawings from public schools was arranged to supplement those executed by students of the Association. Drawings were received from Charterhouse, Shrewsbury, Repton, Dulwich, Christ's Hospital, the Merchant Taylors' School, Clifton, Sherborne, Tonbridge, Bradfield, Epsom, Berkhampsted, St. Paul's School, Uppingham, Gresham's School, Holt; King Edward's School, Birmingham; and King's College School, Wimbledon. Most of the drawings were of landscape and similar subjects, but Tonbridge sent some architural work.

Retirement of Borough Engineer.

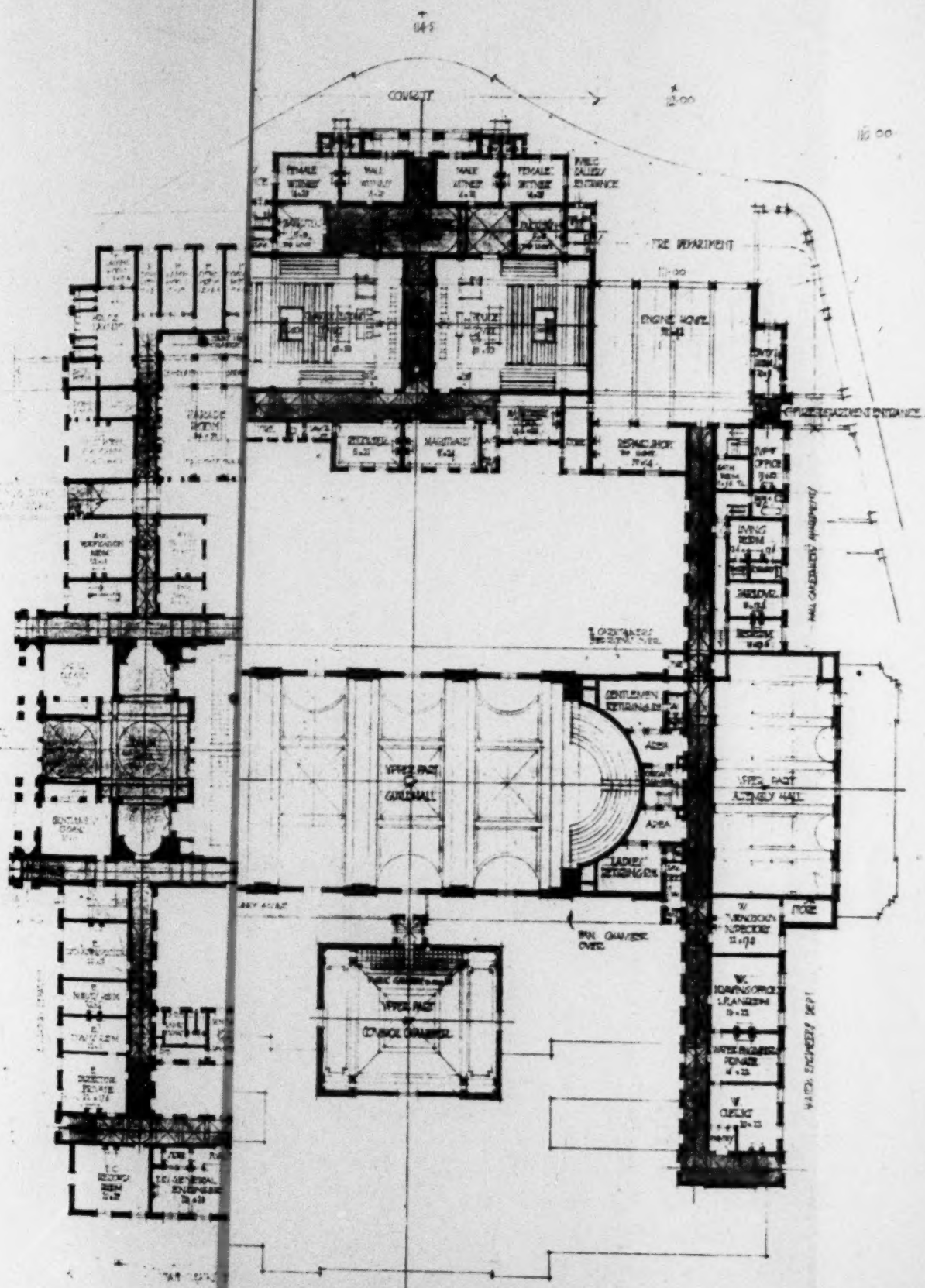
Mr. Charles Jones, who recently completed fifty years as Engineer and Surveyor to the Ealing local authority, has resigned. In recognition of his services the Council have decided to invite him to become Mayor of Ealing for the next official year.

FIFTY YEARS AGO.

From the *Builder* of July 25, 1863.

MIGHT not the frightful waste of money attendant on the destruction of the Exhibition Building be arrested, and a permanent exhibition formed, with attendant hall and spacious galleries; making up for a great deficiency—the want of free and unrestricted covered space—that is universally felt in the metropolis; there being, in fact, no place for considerable gatherings? Fashion is powerful, and it has been the fashion to decry this building; and "delenda est Carthago" has been too soon shouted.

*** We think the above is an excellent suggestion and was in fact that acted on by our neighbours when they built the Grand and the Petit Palais instead of temporary buildings.—ED.



GUILDHALL - 1ST FLOOR OF MUNICIPAL OFFICES, ORDNANCE LEVEL. 111·6
GALLERY - FLOOR OF GUILDHALL, ETC. " " 111·6
BASEMENT FLOOR OF POLICE DEPTS. " " 111·0
GROUND FLOOR OF COURTS. " " 113·9

Martin, Hood & Lunkin, Photo Litho, 61, Newport St, W.C.

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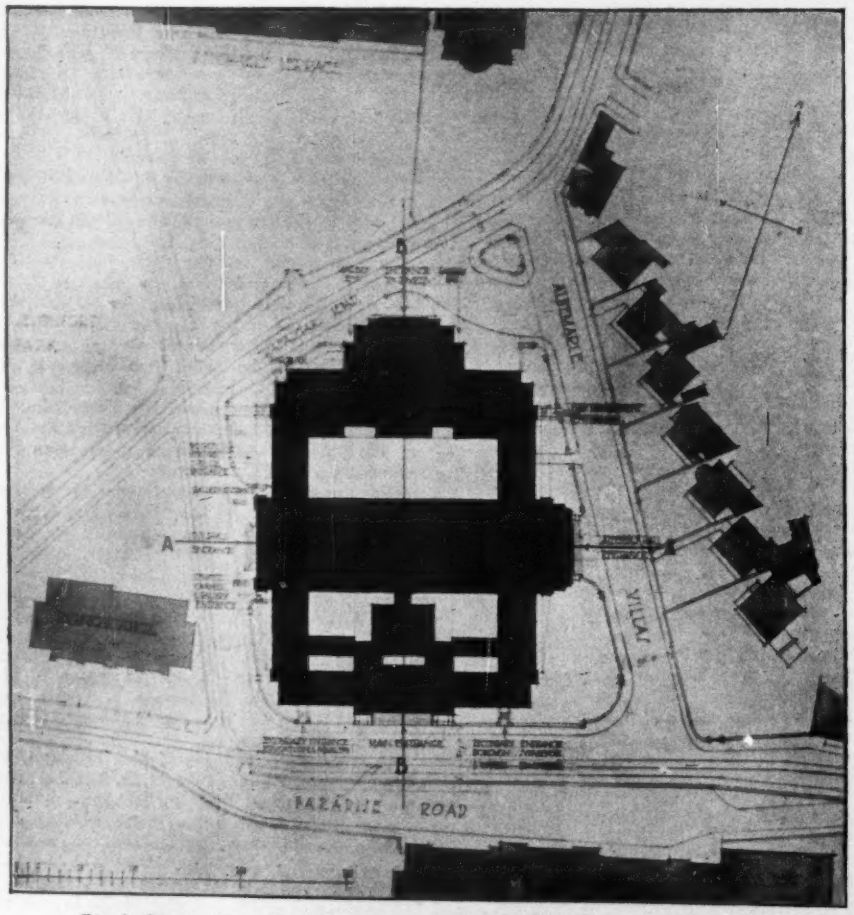

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R. S. Dixon	G. Davidson

Drawings for Public Schools.

In connection with the breaking-up ceremony of the Architectural Association Schools a selection of drawings from public schools was arranged to supplement those executed by students of the Association. Drawings were received from Charterhouse, Shrewsbury, Repton, Dulwich, Christ's Hospital, the Merchant Taylors' School, Clifton, Sherborne, Tonbridge, Bradfield, Epsom, Berkhampsted, St. Paul's School, Uppingham, Gresham's School, Holt; King Edward's School, Birmingham; and King's College School, Wimbledon. Most of the drawings were of landscape and similar subjects, but Tonbridge sent some architural work.

Retirement of Borough Engineer.

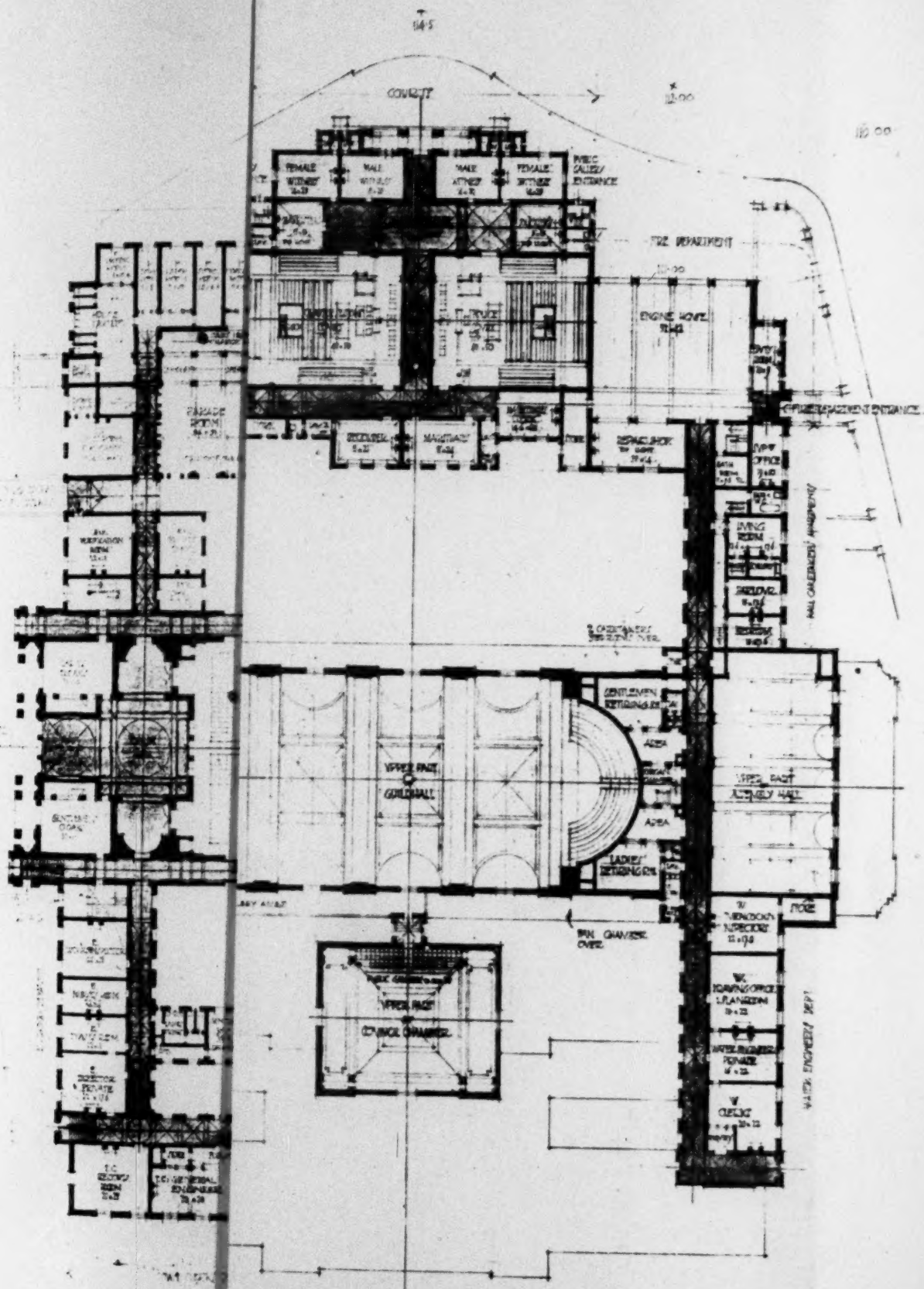
Mr. Charles Jones, who recently completed fifty years as Engineer and Surveyor to the Ealing local authority, has resigned. In recognition of his services the Council have decided to invite him to become Mayor of Ealing for the next official year.

FIFTY YEARS AGO.

From the *Builder* of July 25, 1863.

MIGHT not the frightful waste of money attendant on the destruction of the Exhibition Building be arrested, and a permanent exhibition formed, with attendant hall and spacious galleries; making up for a great deficiency—the want of free and unrestricted covered space—that is universally felt in the metropolis; there being, in fact, no place for considerable gatherings? Fashion is powerful, and it has been the fashion to decry this building; and "delenda est Carthago" has been too soon shouted.

*** We think the above is an excellent suggestion and was in fact that acted on by our neighbours when they built the Grand and the Petit Palais instead of temporary buildings.—ED.



GUILDHALL 1ST FLOOR OF MUNICIPAL OFFICES. ORDNANCE LEVEL. 111-0
" BASEMENT FLOOR OF GUILDHALL, ETC. " " 111-6
POLICE GROUND FLOOR OF POLICE DEPTS. " " 111-0
" GROUND FLOOR OF COURTS. " " 110-9

Martin, Hood & Lawton, Photolitho, 61, Newport St, W.C.

GENERAL NEWS.

Professional Announcement.

s. John W. Simpson, F.R.I.B.A., and
l Ayrton, A.R.I.B.A., of 3, Verulam-
gs, Gray's-inn, London, W.C., ask us to
hat in accordance with their usual
their offices will be closed from August 4
oth days inclusive, for the annual staff
s. Arrangements will be made, as usual,
ing with all business referring to build-
actual progress.

Royal Institute of British Architects: Board of Architectural Education.

Board of Architectural Education of the
nstitute of British Architects announce
e designs submitted by the following
s are who qualifying for the final exami-
have been approved:—

SUBJECT VIII.

Design for a Carriage Entrance.

Bennett.

SUBJECT IX.

Design for a Bank.

harles	J. J. Nathaniels
S. Foster	C. H. Wright
ham	H. T. Cooksey
Davison	C. H. Woodhouse
larchinton	C. Ripley
rossland	J. O Thompson
Frankland-Bell	T. T. Jenkins
	B. Newboult
headle	E. R. F. Cole
Martyn	A. Thorpe
handler	O. Newbold
	C. H. James
oper	A. Silcock
tainsby	V. Dyson
enal	L. Foster
Knight	R. A Barber
Bull	A. J. Sparrow
nett	H. Andrew
et	J. K. Currie

SUBJECT X.

for a Monument Containing One or More Fountains.

ne	R. S. Wallace
Locke	J. S. Hodges
urnett	J. E. Lutyens
amson	B. A. Miller
altenbach	E. C. Davies
Charlewood	R. H. Philp
ebbutt	A. F. Hooper
see	J. Macgregor
ddey	J. C. Fowell
ins	F. O. Lawrence
ixon	G. Davidson

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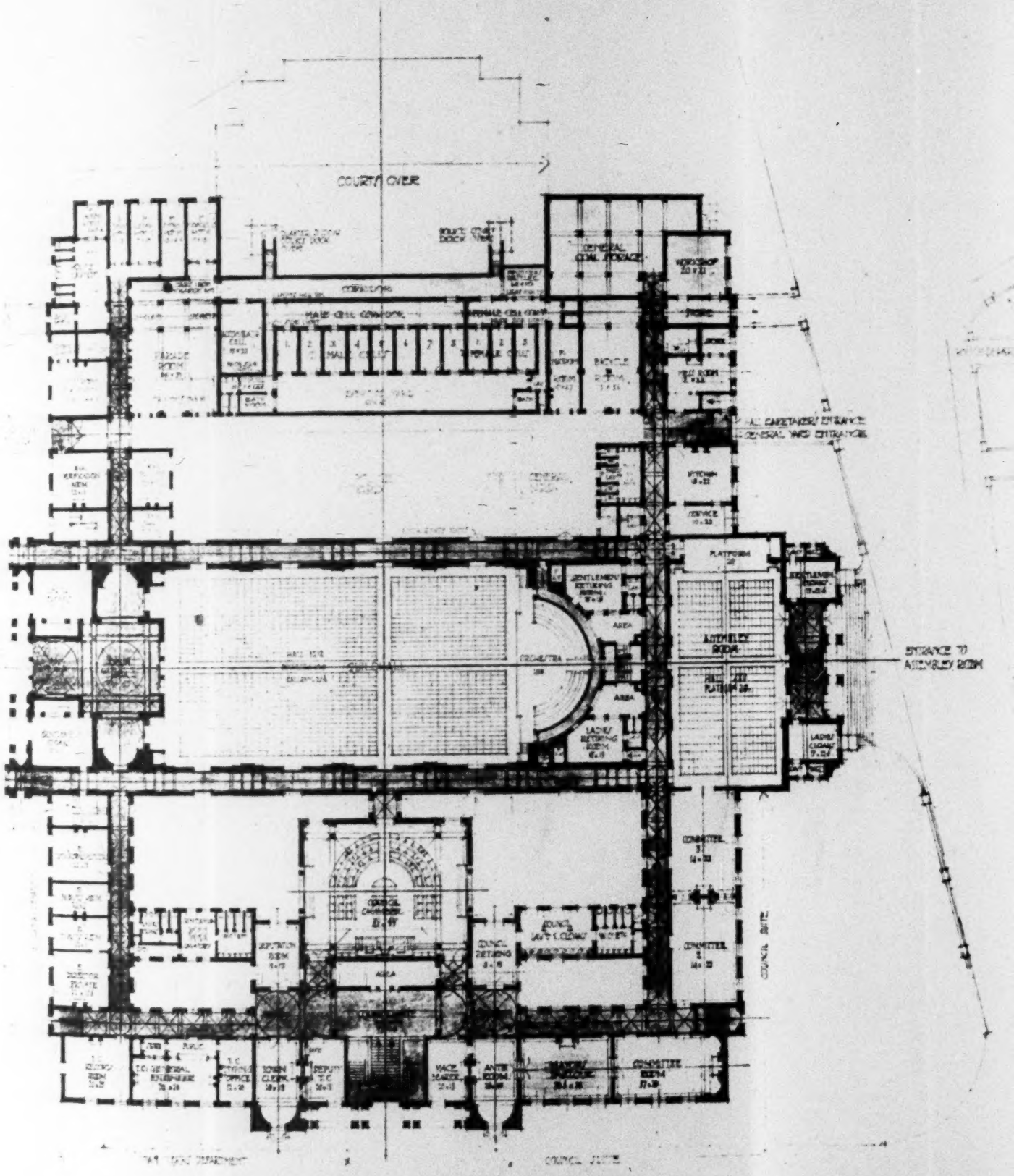
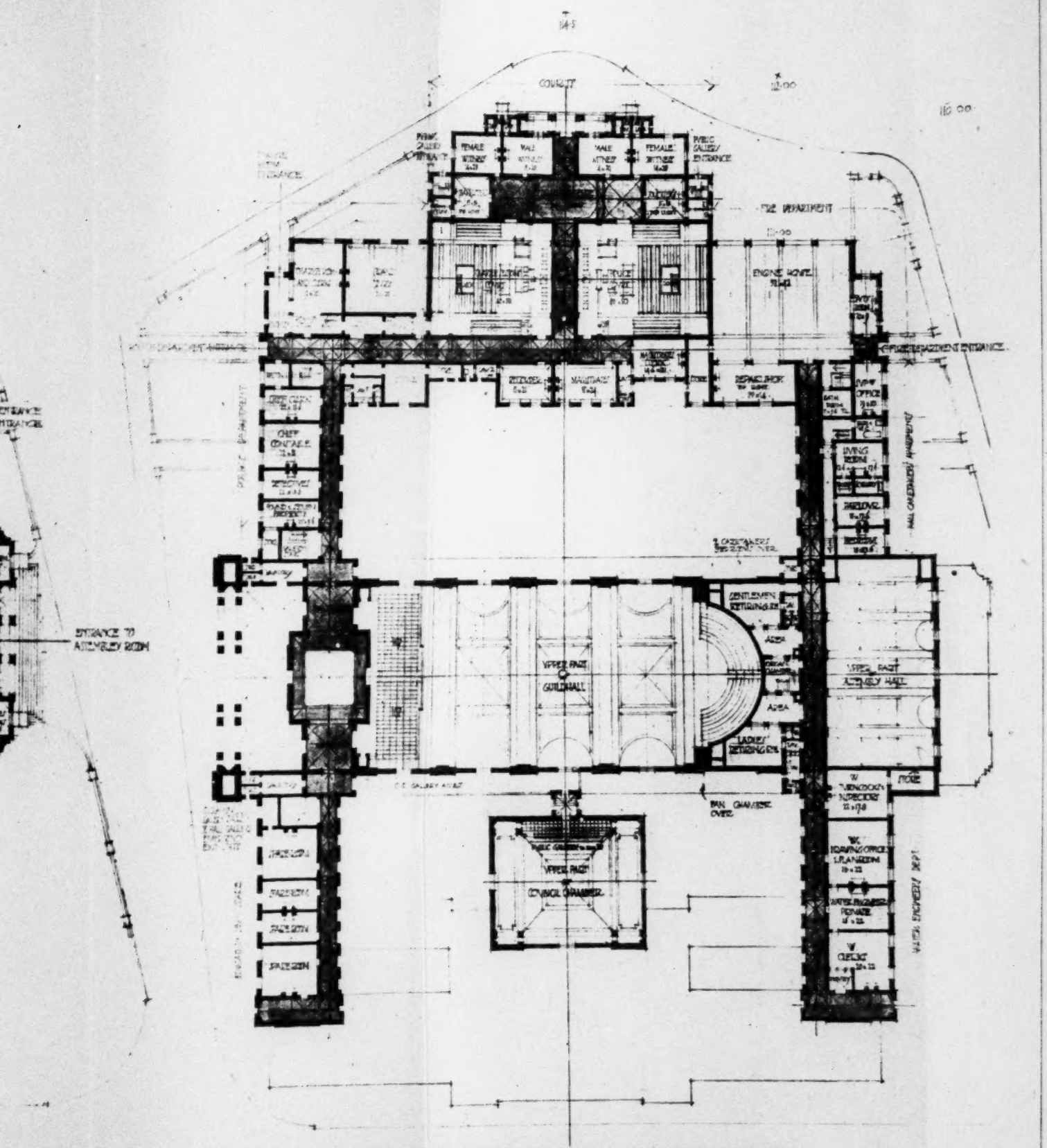


MUNICIPAL OFFICES. FIRST FLOOR. ORDNANCE LEVEL, 98-0
GUILDHALL: ASSEMBLY R^M. GROUND FLOOR. " " 98-0
POLICE DEP^T. LOWER GROUND FLOOR. " " 99-0

DEVONPORT MUNICIPAL BUILDINGS: FI

MESSRS. ASHLEY & NEWMAN,

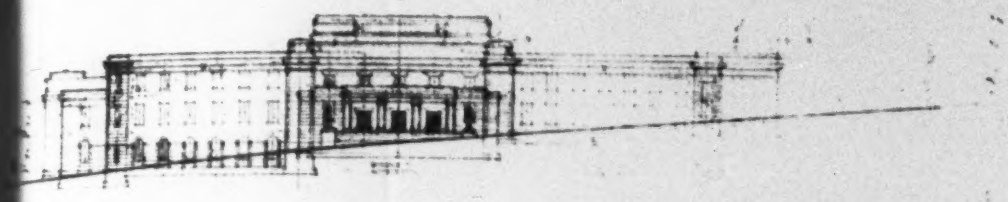


SECOND FLOOR OF MUNICIPAL OFFICES.	ORDNANCE LEVEL.		111·0
GALLERY-FLOOR OF GUILDHALL, ETC.	"	"	111·0
GROUND FLOOR OF POLICE DEP'RTS.	"	"	111·0
AND GROUND FLOOR OF COURTS.	"	"	113·9

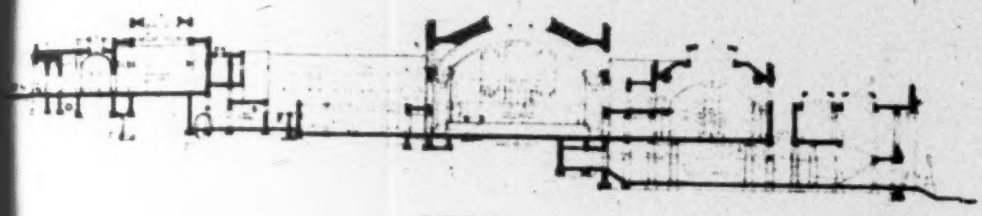
Martin, Hood & Larkin, Photolitho., St. Newport St. W.C.

PAL BUILDINGS: FIRST PREMIATED DESIGN.

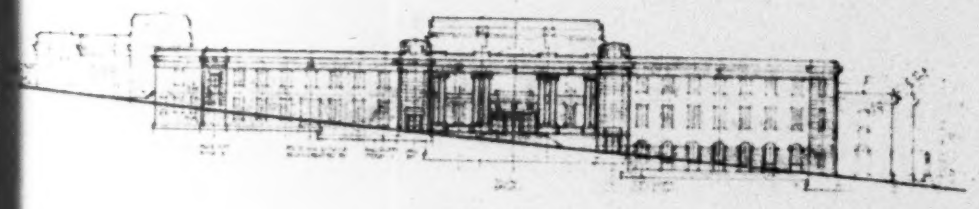
ASHLEY & NEWMAN, ARCHITECTS.



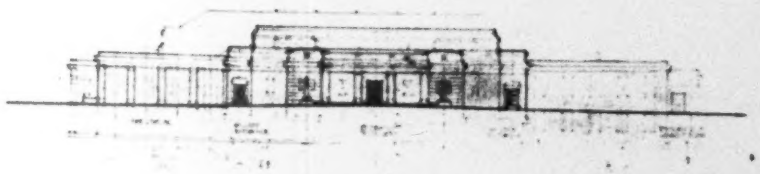
EAST ELEVATION



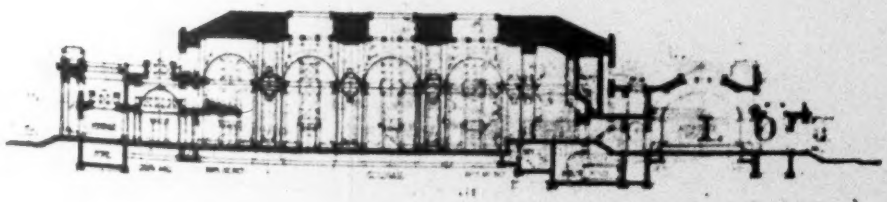
SECTION B-B



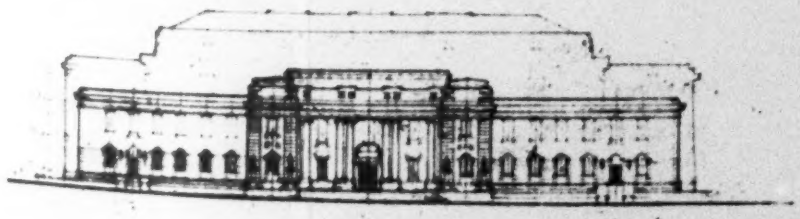
WEST ELEVATION



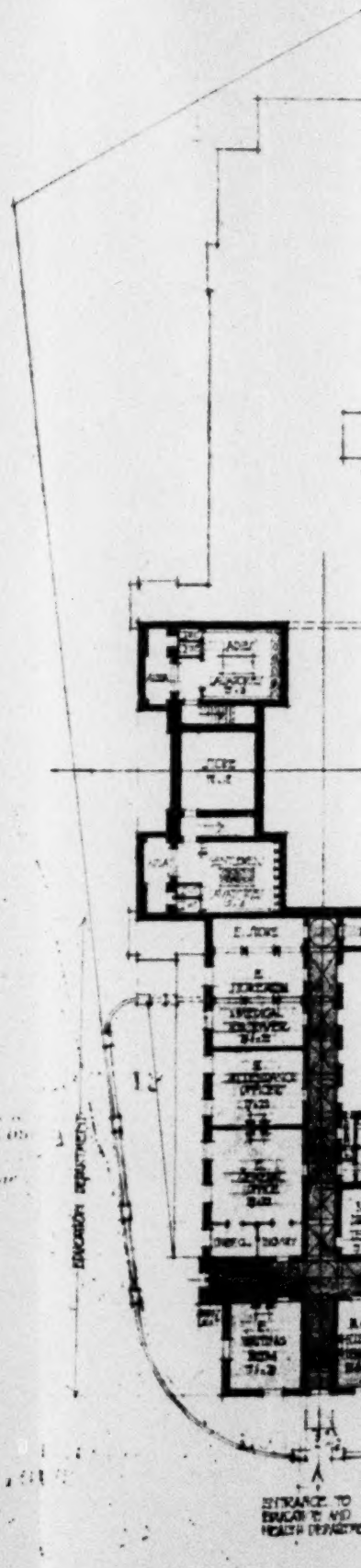
NORTH ELEVATION



SECTION A-A

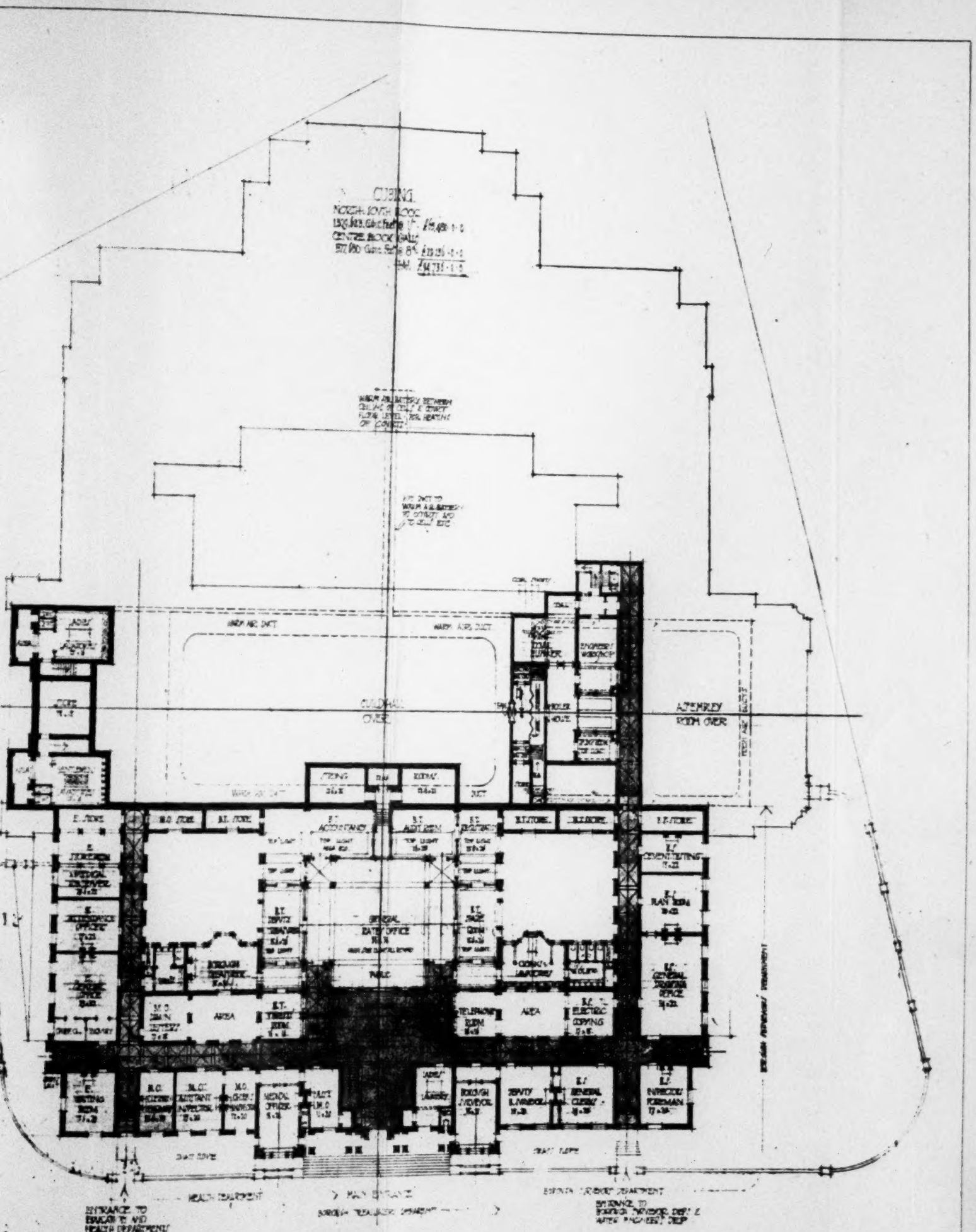


SOUTH ELEVATION



DEVONPORT MUNICIPAL BUILDINGS: FIRST

Messrs. ASHLEY & NEWMAN, Arc

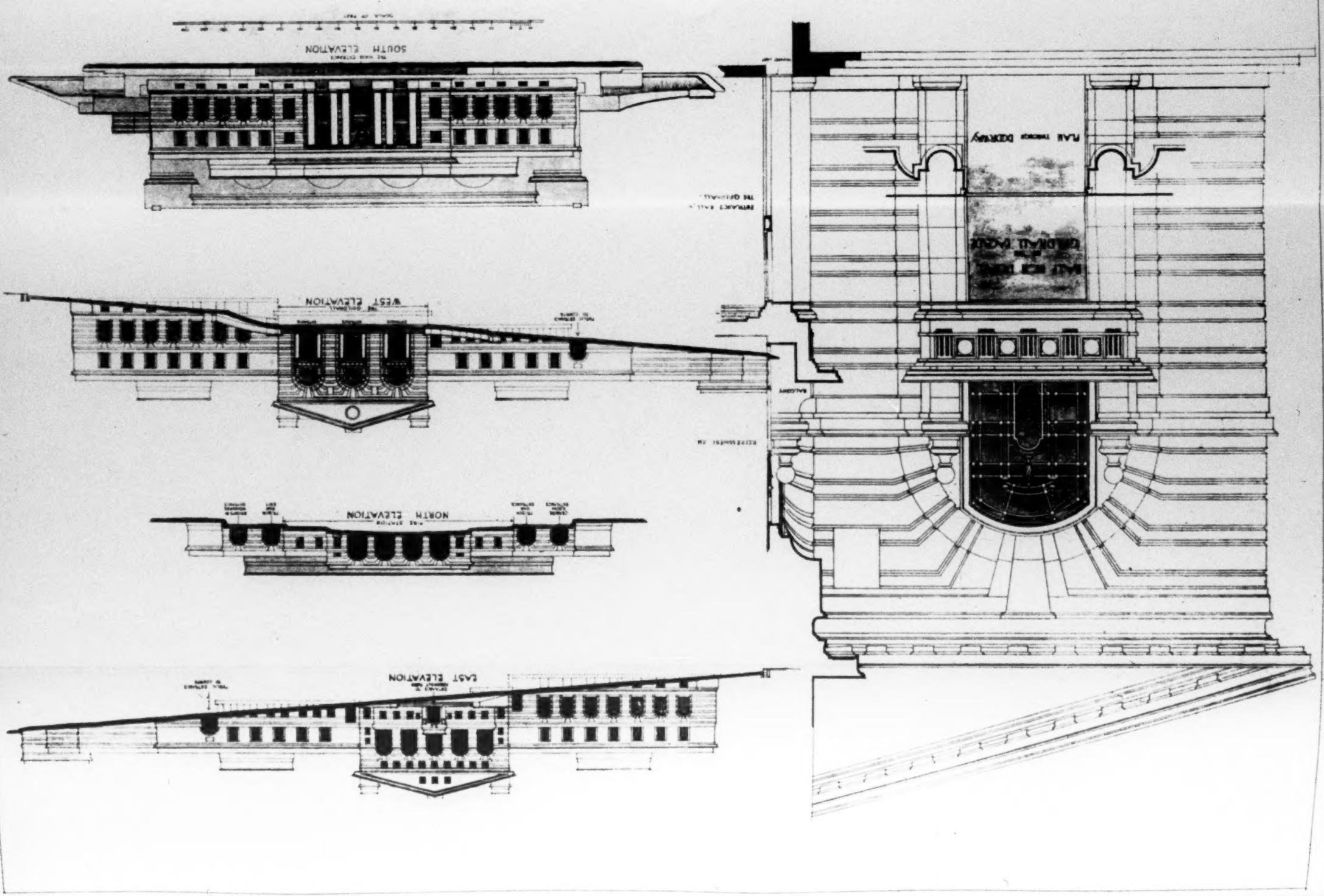


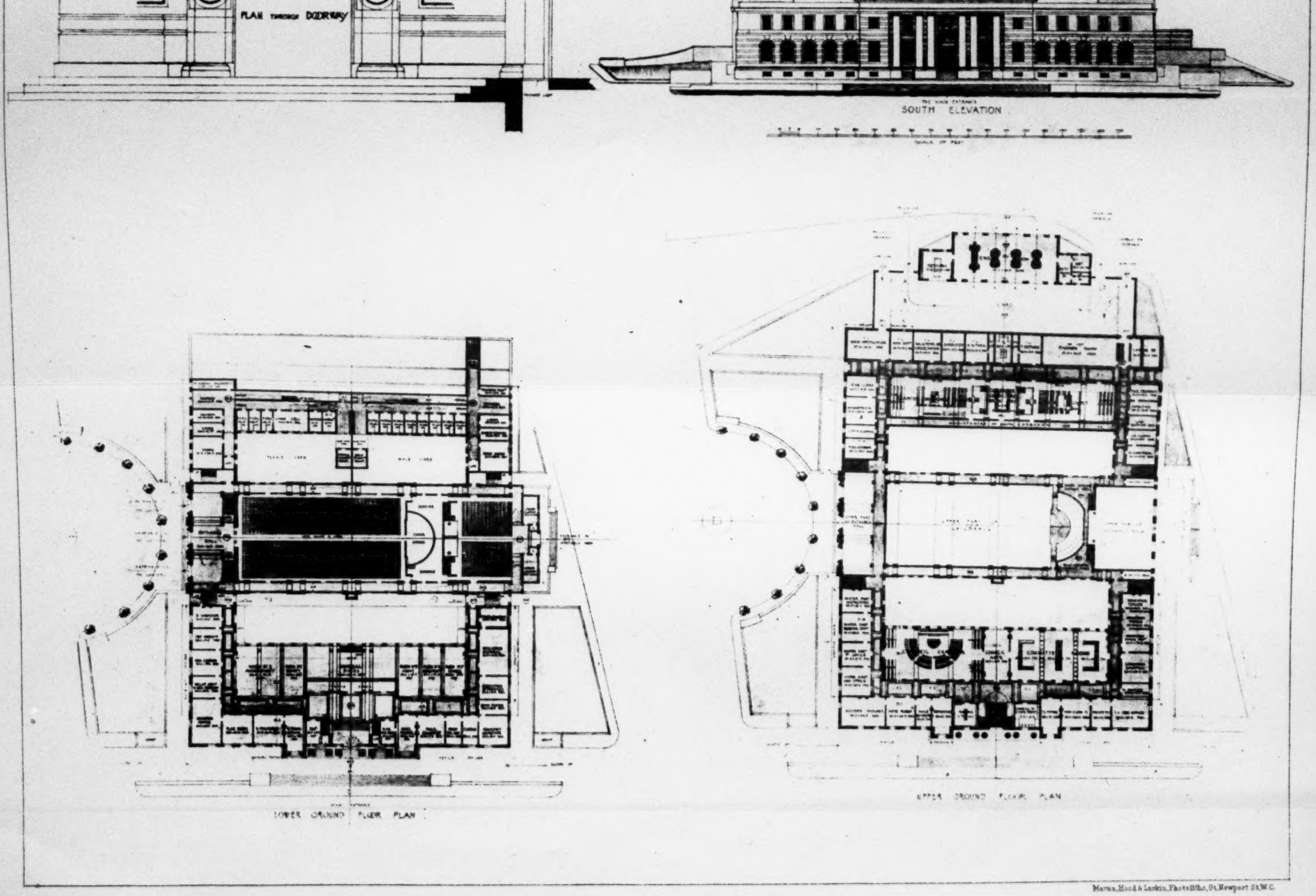
GROUND FLOOR
OF MUNICIPAL OFFICES.

Martin, Hood & Larkin, Photolitho, 6c, Newport St, W.C.

. BUILDINGS: FIRST PREMIATED DESIGN.

SHLEY & NEWMAN, ARCHITECTS.


SOUTH ELEVATION
WEST ELEVATION
NORTH ELEVATION
EAST ELEVATION



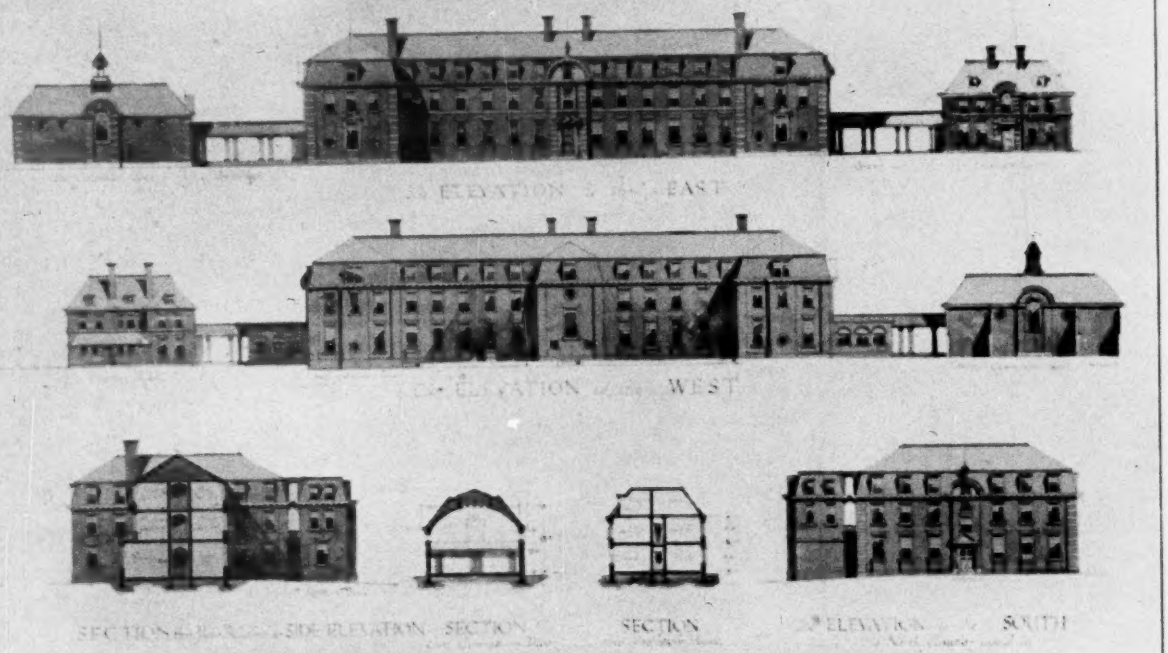
Marcus, Hood & Larkin, Photolitho., 61, Newport St. W.C.

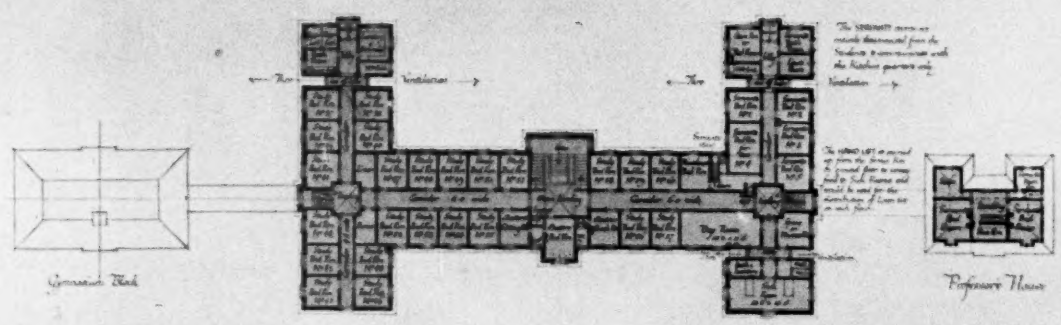
DEVONPORT MUNICIPAL BUILDINGS: SECOND PREMIATED DESIGN.

Messrs. HARRIS & MOODIE, AA.R.I.B.A., ARCHITECTS.

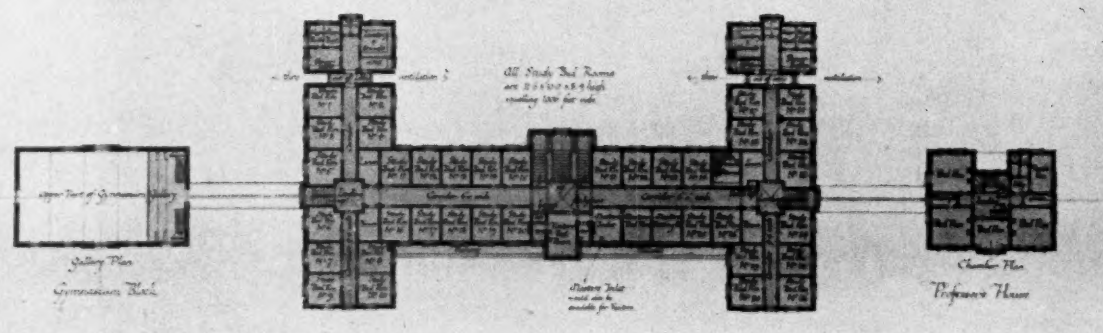
UNIVERSITY COLLEGE

Proposed Hostel for Men

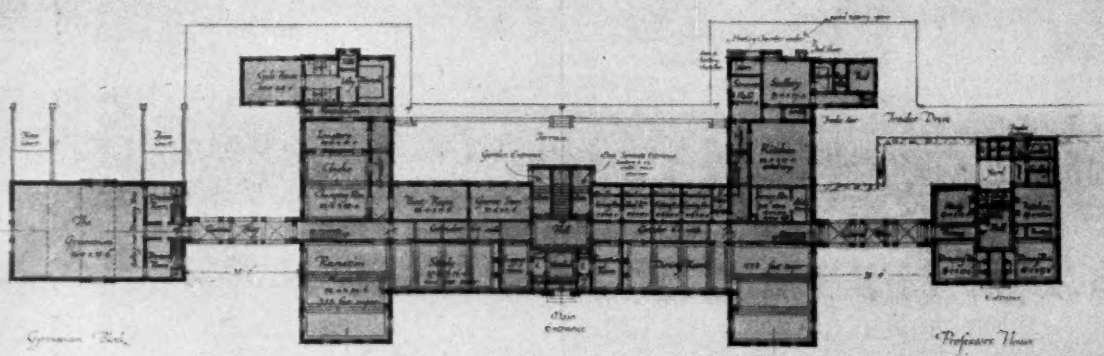




The SECOND FLOOR *Plan*



The FIRST FLOOR *Plan*



The GROUND FLOOR *Plan*

Martin, Hood and Larkin, 2 Great Newport Street, London, W.C.

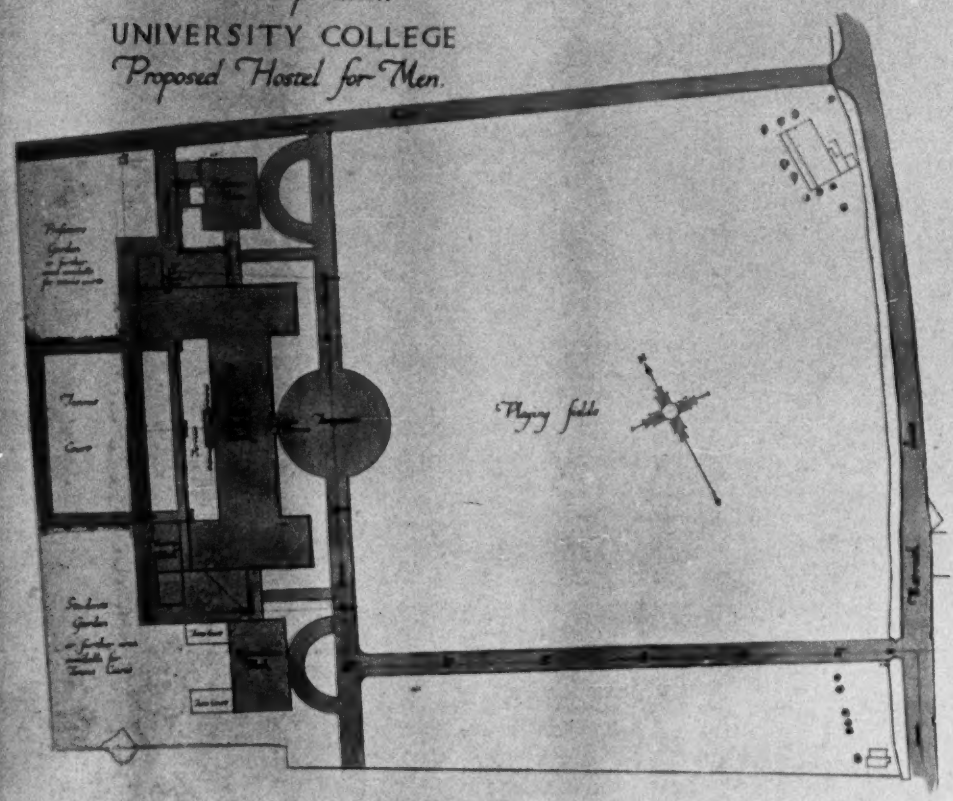
UNIVERSITY COLLEGE EXETER: HOSTEL FOR MALE STUDENTS.

FIRST PREMIATED DESIGN BY Messrs. GARRATT & SIMISTER, ARCHITECTS.

THE BUILDER, JULY 25, 1913.

Exeter Corporation
UNIVERSITY COLLEGE

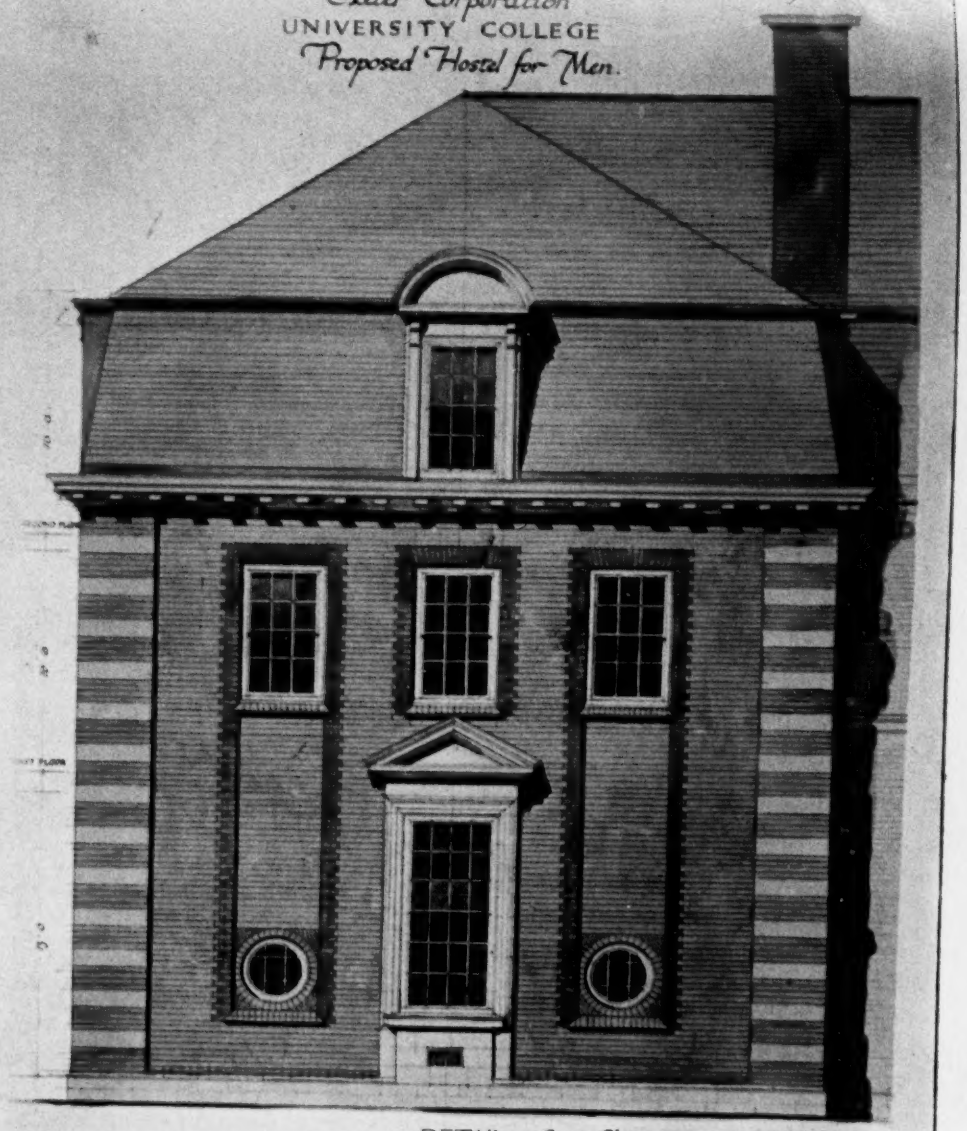
Exeter Corporation
UNIVERSITY COLLEGE
Proposed Hostel for Men.



The SITE PLAN

The BASEMENT Plan

Exeter Corporation
UNIVERSITY COLLEGE
Proposed Hostel for Men.



DETAIL East Elevation

UNIVERSITY COLLEGE, EXETER: HOSTEL FOR MALE STUDENTS.
FIRST PREMIATED DESIGN BY MESSRS. GARRATT & SIMISTER, ARCHITECTS.

Martin, Hood and Larkin, 8 Great Newport Street, London, W C

LIGHT

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LIGHTING, HEATING, AND SANITARY ENGINEERING SECTION.

RECENT DEVELOPMENTS IN CENTRAL HEATING.

FIFTEEN years ago an architect or engineer who desired to install a heating installation experienced little difficulty in selecting the type of apparatus to use. It was merely a question of which of two systems should be adopted—"hot water" or "steam"? For residential work he would easily decide in favour of hot water; for a factory or workshop, steam; and for a public building he would probably be guided by the amount of money available, a steam system being usually less costly than hot water.

Now every morning's post brings him a description of a new system of heating, each claiming to possess advantages not belonging to any other system. There are numerous means of circulating the heating medium, whether hot water, steam, or air, in addition to the multitude of methods of diffusing the heat units by various forms of radiators, coils, and batteries. In addition to the ordinary "low-pressure hot-water" systems, in which hot water circulates by natural means through the pipes and radiators, usually designated "gravity" systems, there are now low-pressure accelerated systems in which heated water is circulated by means of a pump or by various forms of automatic circulators.

The method of heating by low-pressure steam in which the water of condensation returns to the boiler by gravity is rarely used. It is now customary to introduce steam into the radiators or coils at a pressure below that of the atmosphere, the returns being taken to a vacuum pump and returned in the form of condensed water to the boiler.

For private houses and small buildings hot-water heating is deservedly the most popular owing to its simplicity and the ease with which the temperature may be controlled. If space can be found to accommodate the somewhat large pipes, undoubtedly the natural or gravity means of circulation should be adopted, as in this way all complications of pumps or accelera-tors are avoided. It is necessary, to obtain uniform temperature, to grade the mains and branches with care.

If electric power is available the introduction of a small electrically-driven pump can easily be arranged in the boiler-house. This should be fitted with a by-pass, and if the system has been well designed and installed it will be found that, after running the pump for a short period, the by-pass can be opened, and the system will work naturally for a considerable time.

The usual argument in favour of accelerated systems is that as smaller pipes can be used they can be more easily hidden from view. Apart from the convenience of being able to "dip" the pipes without consideration of levels, the advantage gained is problematical. No very great reduction in the size of pipes is permissible with an accelerated system if good results are to be obtained, and it is found in practice that if chases in walls have to be formed for pipes these can usually be as conveniently formed of sufficient size to accommodate the larger pipes required for a gravity system.

Most of the automatic accelerated systems have the disadvantage that the circulator has to be fixed above the highest point in the system, usually necessitating its being near the bedrooms, and, as the circulator rarely works without some slight noise, considerable dis-comfort may be caused at night.

An apparatus which may appear to be per-fectly silent in working in the daytime may prove an intolerable nuisance at night, when the stillness exaggerates the slightest sound.

A further important point which should be taken into account in connection with the use of an automatic circulator is the difficulty of control and regulation. Certain of these systems necessitate the use of a low-pressure steam-boiler; others work in conjunction with hot-water boiler, but in every case a very slight drop in the boiler temperature will effectively stop the circulation, while a rise in the temperature will cause noise in the system. To maintain an even temperature in the boiler an automatic draught or damper regulator is usually provided. These, while being very excellent apparatus, are rarely connected up with sufficient nicety to regulate the draught with the accuracy that is essential to correct the vagaries of the average boiler attendant.

The various forms of vacuum or atmospheric steam systems are suitable for the warming of large buildings or public institutions, particu-larly where a quantity of exhaust steam is available.

To retain their efficiency periodic attention to the automatic valves is necessary, as unless these are carefully adjusted a suitable vacuum cannot be maintained, resulting in an unduly high temperature in the radiators, causing dryness and oppressiveness in the air and smell through the burning of dust on the heated surfaces.

There is a difficulty in regulating the tem-perature of the individual radiators on these systems, owing to the fineness of adjustment required to throttle the steam inlets to the radiators, and the occupants of the room rarely have the patience to regulate the valves until the temperature suits their requirements, but either shut the valve off entirely or leave it full on and cool the room by opening the windows and consequently wasting fuel.

Undoubtedly prejudice against central heat-ing has been largely fostered by ill-arranged and badly-managed heating installations, where radiators and pipes at high temperature, utterly regardless of the weather, are allowed to burn the dust and dry the atmosphere until the victims—whose throats are parched and heads are aching to bursting-point—anathe-matise all types of central heating without distinction.

Notorious examples are many of our older churches as well as public museums and galleries, where the heating pipes generally are fixed in trenches under the floors, where they become coated with dirt and filth of all descriptions.

Recent improvements in the design of heating elements have been influenced by the recognition by architects and their clients of the necessity of designing heating apparatus with relatively large radiating surfaces, so that the desired results may be obtained without increasing the radiator temperature above 150 deg. Fahr. The newer designs of radiators also allow greater facilities for cleaning, and there is a tendency to abandon the crevices and corrugations which at one time were considered to increase the emissivity of the surface, but which, becoming coated with dust, were not only rendered useless as radiating surface, but became a positive danger to health.

When selecting a radiator care should be taken that the castings are smooth and the sections well apart. If the radiators are to be enclosed the cases should be formed with the fronts easily removable, so that the interior can be readily cleaned.

Owing to the difficulty of cleaning the floor space under radiators (particularly behind the feet), dust is frequently allowed to accumulate at these points. Wherever possible, radiators should be supplied without feet and fixed on brackets with sufficient space to enable a broom to be passed under the radiator when sweeping.

Where fresh-air inlets are arranged behind radiators great care is necessary to facilitate cleaning, not only behind the radiator, but in the inlet itself. The baffle plates should always be of detachable type, and both external and internal gratings should be removable.

Probably the greatest advance towards hygienic methods of heat distribution is the system of warming sections of the walls and floors that has been adopted in several recent buildings.

This system can be arranged so that there are no crevices or shelves for the lodgment of dust, and, furthermore, it can be incorporated in the general design of decoration so as to render it inconspicuous.

The ancients appreciated this method of warming, and applied heat to flat surfaces by a more or less elaborate and costly arrangement of flues or ducts through which furnace gases or heated air were passed.

Similar results can now be obtained with less crude methods of construction, and with an economy in working at least equal to any other form of heating.

In this connection the following extracts from a lecture recently given by Capt. H. Riall Sankey, R.E., M.Inst.C.E., before the Junior Institution of Engineers, in regard to heating systems, may be of interest:—

"Most of the systems hitherto adopted have been devised so as to heat the air, and radiant heat has been, to a large extent, neglected, notwithstanding the use of ordinary so-called "radiators." A moment's con-sideration will show that the design of these radiators is such that only a portion of heating surface radiates heat into the room, and, in fact, the major portion of the heat serves to warm the air by convection.

It is generally conceded that for comfort, when sitting in a room without a fire, an air temperature of about 63 deg. Fahr. is needed; and, in order to obtain this temperature, the surface of ordinary radiators requires to be at a fairly high temperature of, say, 150 to 180 deg. Fahr., unless a commercially impossible amount of heating surface is provided. This temperature is sufficient to decompose the dust in the air, thus producing a disagreeable and characteristic smell. Moreover, the humidity is reduced unless special precautions are taken, causing, as is well known, a dis-agreeable sensation; and even a feeling of cold may be produced, due to the rapid evaporation of moisture from the skin.

When radiant heat from a fire is available the air temperature can be as low as 55 deg. Fahr., or even 50 deg. Fahr., and yet the sense of comfort and warmth is greater than in the previous case, *i.e.*, when there is little or no radiant heat. To maintain the temperature at 50 or 55 deg. Fahr. a hot-water system of heating, or the like, will be required in many cases; but the temperature of the heating surface can be reduced, and the air is not dried to the same extent. Such a system, although ideal, is more costly; and, moreover, the expense and trouble of laying fires, clean-ing out fireplaces, and removal of ashes, which are a serious drawback in the case of large offices, are not obviated.

It will be gathered that, as regards the warmth point of view, the comfort of a person in a room depends on complicated inter-changes of heat. Heat is received by the person by direct radiation from hot surfaces, and by indirect radiation from these hot surfaces due to reflection and by reflection from surrounding objects. The person is losing heat by contact with the air, which is always at a lower temperature than the body, and also by evaporation of moisture from the skin, due to dryness of the air; there is also a loss due to radiation from the body to the surrounding objects. A perfect system of heating requires a skilful combina-tion of all these interchanges of heat.

The method of construction consists essentially of a small pipe bent backwards and forwards and imbedded in a semi-con-ducting composition. The heat-carrying medium, say hot water, circulates in the tube, and the heat is conducted through the walls of the tube to the composition, through which it spreads to the surface, whence it is radiated into the room; in effect, heat at a comparatively high temperature issuing from a small surface is converted into the same amount of heat at a lower temperature issuing from a large surface."

When dealing with lecture halls, concert-rooms, and theatres of large cubical content, it is necessary to augment the heating apparatus with a system of ventilation which should preferably consist of a balanced mechanical inlet and extraction system.

The incoming air should be thoroughly purified by means of an efficient air-washing plant, provided with an eliminator to remove surplus moisture. The latter should be fitted with means for regulating the saturation of the air, so that, after having been warmed to the desired temperature, the air will remain

humidified to the extent of 65 per cent. to 70 per cent. total saturation.

Air containing less than this percentage of moisture in suspension causes much discomfort by drying the throat and air passages; owing to the capacity of relatively dry air to absorb moisture under these conditions it takes up a considerable quantity of organic matter in the process of respiration, becoming a vehicle for the dissemination of colds and other diseases of the respiratory organs.

Little advantage and comfort is derived from the use of a ventilating system, however frequent the interchange of air, unless proper attention is paid to the maintenance of the requisite degree of humidity.

THE EFFECT OF THE PROPOSED LONDON COUNTY COUNCIL CODE UPON THE USE OF RICH MIXTURES IN REINFORCED CONCRETE.

A FACTOR always important and often vital in the design of beams and members of reinforced concrete is the limit of the permissible stress on the concrete, which is a heavy and comparatively weak material even in compression. Even when it is reinforced in compression it is necessary to so reduce the stress in the compression rods that the concrete adhering to and deforming with them will not crack or spall off and leave the rods denuded, in which condition they are, in beams, virtually flanges under compression, with neither web nor stiffeners, and are free to buckle. At a very early stage also the designer is forced to appreciate the need for strong concrete in columns under heavy or even under ordinary stresses.

Resistance to compressive stress under bending moments is by no means the only work demanded of the concrete of a beam. It must be able to so connect all the essential parts of the beam that they will work together efficiently; it is frequently called upon to take substantial shear stresses, including diagonal tension; it must prevent local buckling of compression rods and hold in the stirrups or laterals which prevent buckling in long lengths. Under unequal loading it is often placed in tension, and at all times it is relied upon for fireproofing.

Serious failure may occur if it is unable to perform any of these functions, about some of which we hardly know enough yet to be at all sure of our factors of safety. The more lightly it is stressed the more bulky it must be; and the proportion of available strength which is mortgaged to the necessity of carrying the dead weight of material, even in comparatively short and lightly-loaded members, is a serious item; whilst in long or heavily-loaded beams the difficulty of carrying the dead load at the stresses now in common use is often a most difficult problem, which under some conditions renders the use of the material impossible.

In view of these facts the severe and even extraordinary reduction of concrete stresses proposed in the new London County Council Regulations is a matter of most serious moment to everyone concerned or interested in a material whose use is extending daily. It may be contended that these Regulations will only legally apply to very few buildings. But the moment they become law they will, as the first and only official code, take precedence of any other standard.

The actual reductions in permissible stress stipulated in the proposed code are more severe than appears at first sight. Nominally the stress on 1 : 1 : 2 concretes is reduced from 900 lb. per square inch to 650 lb., or only 50 lb. more than is permitted on 1 : 2 : 4 concrete. But it is also required that a modular ratio of 8 instead of 15 is to be used in the calculations. The latter stipulation is in effect equivalent to a further reduction, so that the greatest permissible stress is really in the neighbourhood of only 550 lb. per square inch, *or 50 lb. lower than is allowed on 1 : 2 : 4 concrete.* When to this is added the personal factor in the shape of the enormous and intricate labour involved by a varying modular ratio it will be seen that the new proposals practically penalise rich concretes out of existence altogether; and in the nominal interests of safety they thus effectually prevent any improvement in what is, and probably always will be, the weakest and yet the most important constituent of reinforced concrete; and they tend to overload structures with an even greater dead weight of material than at present.

If the object of thus preventing the use of rich concretes is due to any doubt of their reliability, the point should have been submitted to the test of experimental research under the powers granted by the authorising Act. Rich concretes have been extensively used in the past, and are probably being put in everyday in large public and Government contracts. In all probability, however, the proposed stresses are not based upon considerations of strength at all, but are merely a method, rather more ingenuous than practical, of helping the district surveyors who would in the ordinary course be unable to personally supervise the actual mixing of concretes specified as rich, and so allowed for in the calculations. This contingency, however, might surely have been met by making it compulsory that rich concretes should only be credited with their full strengths if mixed under such conditions and supervision as the district surveyor might deem necessary.

Even though it may be contended that the inevitable hardening of concrete with age will eventually allow for any reduction of strength due to stereotyping the use of the comparatively weak 1 : 2 : 4 mixture, it can easily be

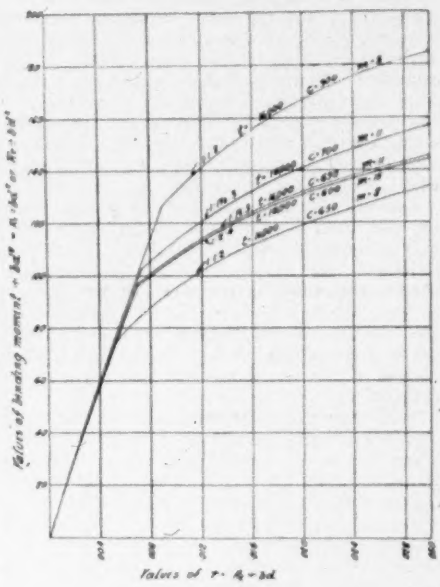


Fig. 1.

shown that the proposals must result in a great increase of cost, sufficient in many cases to absolutely prevent reinforced concrete from competing with other methods of construction.

The joint action of steel and concrete is like that of a strong, willing horse and a weak, lazy one yoked together to pull the same load. If the load is light our principal duty is to see that the eager steel does not take too much stress and overwork itself; but when the load is heavy the weak concrete will give in first. We may add another strong horse in the shape of compressive reinforcement, but as all three must pull together it is still the concrete whose strength (or weakness) determines the capacity of the team. Obviously, therefore, when the concrete can be advantageously fed with cement the working efficiency of the whole combination can be raised materially, the cost of working is reduced, and extra heavy tasks become possible which would otherwise be beyond the strength of the team. Fig. 1 shows the moments of resistance of rectangular beams or slabs with single reinforcement plotted for different stresses on the concrete. It will be seen that there is a most marked increase of strength with concretes upon which a stress of 700 lb. or 900 lb. per square inch can be imposed, even when they are debited with reduced modular ratios. It will also be seen that under the proposed code a beam made with strong concrete (1 : 1 : 2) would have to be considered as substantially *weaker* than one made with weaker mixtures.

The short period available for criticising the new Regulations has not permitted the completion of a similar diagram showing the effect on T-beams and on beams with double reinforcement. With the latter the effect is even more marked, as would be expected from the fact that the compressive reinforcement is better able to develop its strength in co-operation with a strong partner, and is seriously hampered by a weak one.

No definite rule can be stated which will fix the point at which it is actually cheaper to use more cement in the concrete, but it may be generally stated that if ordinary stresses are adopted it pays to do so whenever the moments of resistance called for necessitate a proportion of reinforcement which sensibly exceeds the economic ratio.

When comparing the relative cost of richer concrete or extra reinforcement in any given case in connection with providing the necessary resistance to a given bending moment it must be recollected that the cost of supplying and carting aggregate—mixing, watering, hoisting, laying, and supervising—is practically the same for a cubic yard of rich concrete as for a cubic yard of poor concrete. But every ounce of extra reinforcement means expense all round. It must be purchased, carted, measured, checked, sorted, labelled, cut, bent, placed correctly in position, held there, and probably wired, and the concrete must be tamped round it.

The comparison in cost must therefore be made as between the finished cost of reinforcement fixed in the completed work and the cost of cement delivered to the site or mixing banker.

Another important item in the comparison is that when the floor slabs are made of richer concrete the greater part of any T-beams formed by ribs under those slabs is thereby altered to the stronger material. Whenever the severity of the loading makes it desirable to strengthen the concrete of the slabs it is generally even more necessary to strengthen the concrete of the T-beams. With stronger concrete the beam can properly be made smaller, an important consideration where depth is restricted, whilst unnecessary dead weight is always undesirable. The extent to which cost is affected by the strength of the concrete can be seen in the following comparisons:—

With coarse aggregate at 10s. 6d. per cubic yard, fine aggregate or sand at 6s. 6d. per cubic yard, and cement at 30s. per cement ton or 2,200 lb., the difference in cost between 1 : 2 : 4 and 1 : 1½ : 3 concrete, after allowing for reduction in bulk during mixing, is about 1s. 8d. per cubic yard; and between 1 : 2 : 4 and 1 : 1 : 2 concrete about 2s. 8d. per cubic yard. With steel reinforcement at 1¾d. per pound (16s. 4d. per cwt.) the cost of 1 per cent. of reinforcement works out at 132·3 lb. = 19·3s. per cubic yard.

In any situation, therefore, where 1 : 2 : 4 concrete would be normally used it would pay to use 1 : 1½ : 3 concrete if by doing so we can save only 1 per cent. $\times \frac{\text{1s. 8d.}}{\text{19s. 3½d.}}$ = say ·0863 per cent. of reinforcement, or 1 : 1 : 2 concrete if we can save 1 per cent. $\times \frac{\text{2s. 8d.}}{\text{19s. 3½d.}}$ or ·138 per cent. of reinforcement.

Similarly, if the choice lay between 1 : 1½ : 3 and 1 : 1 : 2 concrete the saving of reinforcement necessary to pay for the extra cement would be 1 per cent. $\times \frac{\text{1s. 0d.}}{\text{19s. 3½d.}}$, or only ·052 per cent. When we consider the large proportions of reinforcement, whether single or double, which are necessary with anything more than light bending moments at a stress of 600 lb. on the concrete, it will be obvious that the proposed code, by practically rendering illegal the common-sense expedient of strengthening the factor whose weakness calls for that heavy reinforcement, will greatly increase the cost of building, without increasing, but rather reducing, the factor of safety.

Every engineer knows the importance of the ratio between the weight and strength of a material. The design of the Forth Bridge would have been impossible in wrought-iron at 6½ tons per square inch, because the dead weight of material necessary to reduce the strength to that figure on such a span would have been too great to be carried.

Precisely the same considerations apply to reinforced concrete, with very much greater force. If the designer is prevented from strengthening his material, the cost of structures carrying ordinary light loads is raised, that of structures carrying heavy loads over large spans is increased enormously, and an artificial limit is set which would make tasks well within the known capabilities of the material theoretically impossible.

PERCY J. WALDRAM, F.S.I.

LOADS AND KINETIC EFFECTS ON FLOORS.

In a paper read to the American Society of Civil Engineers Mr. C. J. Tilden discusses the determination and analysis of the forces exerted by an individual or a collection of individuals on floors, bridge platforms, and analogous structures. In previous issues of the *Builder* we have commented upon the investigations of Professor Johnson, who found that a dead load of 183 lb. per square foot was quite within the range of possibility. Mr. Tilden has devoted special attention to the kinetic effects of crowds, and in his paper describes the results ascertained by experiments conducted with the aid of an ordinary platform scale.

In rising smartly from a crouching to an upright position a man weighing 155 lb. was found to exert a momentary downward pressure of 275 lb., representing an increase of 77 per cent. over the static load.

In rising suddenly from a sitting to an upright position the momentary downward pressure was found to average nearly 80 per cent. over the static load. This kind of movement is one of special application to buildings used by large audiences, and the high result denoted points to the fact that the rapidity of the movement, and not the space traversed by the body, is the governing factor. The horizontal thrust exerted by a man in rising from a seat also deserves consideration, as it may easily represent a force equal to 50 per cent. of the static load. Therefore the horizontal force exerted by the simultaneous rising of an enthusiastic audience might be one of great importance.

Horizontal forces due to the walking and running of crowds on floors, bridges, and similar structures are not easy of determination. Mr. Tilden deduces from experimental and other data that the impulsive effect may reach or exceed half the weight of a man walking, and may nearly equal the weight of a man running.

For the application of the experimental results in practice discrimination is obviously necessary. For instance, the probable effect of a crowd cannot be correctly determined by the direct multiplication of individual effect into the probable number of units in a crowd, because the full effect of momentarily exerted forces cannot be developed in the absence of perfect synchronism of motion on the part of every individual—a condition practically out of the question. Again, the denser a crowd the more restricted is individual motion, so that in the case of densely-packed crowds causing high static loads per square foot the kinetic effects are considerably reduced.

The first experiment of a man rising from a crouching attitude has little practical bearing, but the second is of importance, because it often happens that persons attending meetings and witnessing football matches, or other exciting spectacles become very enthusiastic, and so many of them may rise simultaneously from their seats that the total kinetic effect must be considerable, and should certainly be taken into account by the designer. Provision against horizontal effect is not commonly made, but the experiments of Mr. Tilden clearly demonstrate its desirability.

Although the results stated in the paper are not scientifically exact, they are sufficient to indicate approximately the extent to which provision should be made against kinetic effects due to the movements of crowded audiences in buildings.

ENGLISH DECIMAL SYSTEM OF WEIGHTS AND MEASURES.

An American view of the relative merits of the metrical and decimal systems of weights and measures is put forward by Capt. P. S. Bond, United States Corps of Engineers, in a recent issue of the *Engineering Record*. Believing it to be utterly impossible to force the French metric system upon the English-speaking peoples, the writer suggests as a practical remedy the adoption of a decimal system of measures based upon the inch as a unit. This would fit in with existing practice throughout the British Empire as well as in the United States, and, although other dimensions could be altered in value, the unchanged value of the fundamental unit would reduce inconvenience to a minimum.

Two of the tables advocated by Capt. Bond are as follows:—

Linear Measure.

1 in. = Old English inch.
10 in. = 1 ft.
10,000 ft. = 1 mile.

Superficial Measure.

10,000 sq. ft. = 1 acre.

Weights.

10 grains = 1 scruple.
10 scruples = 1 dram.
10 drams = 1 oz.
10 ounces = 1 lb.
10,000 lb. = 1 ton.

These and other necessary tables are certainly open to criticism, but the proposed table of linear measure possesses certain distinctly meritorious features. For instance, the retention of the inch obviates the objection inseparable from the metrical system; the inch is a better unit than the metre, since it is more easy to think and calculate in tens, hundreds, and thousands than in tenths, hundredths, and thousandths. Again, the retention of old names is a feature appealing to the disinclination of the Anglo-Saxon to adopt new or foreign terms. The only thing necessary to make the proposed measure as good as the metric measure would be the universal substitution of decimals for vulgar fractions for parts of an inch.

At the present time the decimal system is being very largely used in one form or another by professional men and industrial firms in this country, but without legislative action it would be quite impossible to effect a radical reform in our irrational systems of weights and measures. It is equally certain that no action will be taken by the Legislature in the absence of a strongly-expressed mandate from the people of this country, and of that there is no very marked indication.

THE TOWN BRIDGE, BOSTON, LINCOLN.

The first mention of a bridge at Boston is in a petition to King Edward the First in 1305 by the Earl of Richmond, who obtained "pontage" for five years, similar grants being subsequently obtained. A bridge was erected in 1500, was in a bad state in 1539, and fell in 1555; it was repaired, and held out until 1629, when it was in such a ruinous state that it was taken down. A new bridge was erected in 1631, having a house on the pier, which was rented for 13s. 4d.; this bridge was in a dangerous state in 1736, the crown of the arch being lowered to prevent its falling. A new bridge was built in 1742 at a cost of £396 14s. 6d.; in 1771 it was reported to be in a dangerous state, and in 1800 it was decided to erect a new bridge of iron. Mr. John Rennie, the engineer of London, Waterloo, and Southwark bridges, designed the new structure, which consisted of eight cast-iron arched ribs of about 88 ft. span, carrying a roadway 35 ft. wide.

This bridge was found to be in a very dangerous state; the ribs, constructed of cast-iron, having top and bottom members, with openwork vertical ornamental web, were fractured throughout; the web having parted from the top and bottom members, the stresses due to the loads passed through only one member or the other, thus creating dangerous unit-stresses; other parts of the structure were also cracked.

Upon the advice of Mr. John J. Webster, M.Inst.C.E., of Westminster, the structure was condemned, and a new one was designed by him. The new bridge, which was opened on Friday, the 18th inst., consists of six parabolic steel ribs, hinged at the springing and at the crown, with a versed sine of 6 ft. 6 in., the width of the road and footways being increased by means of cantilevers on the south side from 35 ft. to 43 ft. between the inside of the parapets. The ribs are of box section, constructed of angles and plates, the angles being 6 by 6 by ⅝ average, with top and bottom flange plates 24 in. wide, varying from ½ in. to 1¼ in. in thickness; the double web is constructed of plates ⅜ in. thick average, stiffened with diaphragms at intervals. The ribs are 1 ft. 9 in. deep at the centre, tapering to 1 ft. 3 in. at the pins, the latter being 6 in. in diameter, with cast-iron bearings. The spandrel verticals, fixed on the top of the ribs and to the longitudinal girders, are of H-section rolled joists 10 by 5; the flooring consists of corrugated-steel plates 9 in by ⅜ in., with additional plate top and bottom ¼ in. thick under the roadway and 3 in. by ⅛ in. under the footway, the former being paved with wood blocks and the latter with concrete slabs. A handsome cast-iron cornice and parapet surmount the outer rib on the north side and the cantilevers on the others. The old brick and stonework abutments were in splendid condition, and have been retained with suitable modifications for the new design.

The contractors for the work were Messrs. Goddard, Massey, & Warner, Ltd., of Nottingham, the resident engineer being Mr. H. F. Richards, Assoc.M.Inst.C.E.

NOTES.

Imhoff Sewage Tanks.

The Imhoff tank, as described by Professor Ogden in a paper read to the American Society of Municipal Improvements, is characterised as the most modern appliance for the removal of putrescible substances from sewage. It is claimed for this tank that it will remove from the sewage at least as much, if not more, of the solid matters as any analogous tank, and that it will so affect the solids deposited as to obviate unpleasant odour, while decreasing their volume by at least one-half by facilitating the drying of the sludge. Two important principles underlying the design and construction of the tank are (1) that the sewage undergoing treatment shall not be disturbed by rising gas bubbles; (2) that the sludge shall be allowed to digest for many weeks in a deep tank. The elimination of rising bubbles is effected by the adoption of a hopper-shaped bottom for the tank and by the formation of a trap causing the gases to be deflected away from the settling basin. As a result of this arrangement it is claimed that the deposit of solids is increased by from 10 to 15 per cent. The prolonged digestion of the sludge is provided for by a decomposing chamber beneath the settling basin, where the sludge is allowed to remain for a period of from three to six months, this chamber being arranged so that no moving or renewed fresh sewage can pass through the decomposing matter. In this way the offensive odour characterising ordinary septic tanks is said to have been obviated.

Imhoff tanks have been adopted at Essen, in Germany, and elsewhere, with satisfactory results, the system being one of distinct interest to those of our readers who are concerned in sewage disposal.

Strength of Wood Packing Boxes.

The tests described in this Note further illustrate the great practical value of the work done by Government Departments in the United States for the benefit of the community and those engaged in industries. The object of the tests was to obtain information as to the relative strength of various types of boxes and to ascertain to what extent wood is customarily wasted by faulty design. The tests are fully described in Circular 214 of the Forest Service of the Department of Agriculture, and were conducted in the Laboratory of the Forest Service at Madison, Wisconsin. Ninety-six boxes of different sizes and construction were examined and subjected to end compression, diagonal compression, and drop tests. The conclusions as to nailed boxes are that those with single ends without cleats are very unsatisfactory, because the ends split easily, and the nails driven into the end grain of the wood have little holding power. Those with cleated ends were much better, and did not fail until the nails holding the top, bottom, and sides to the ends had loosened their hold. Therefore the Circular recommends that the ends should be of thin boards with four cleats of wood possessing good nail-holding power.

Initial Stresses in Structural Steel.

In a paper read to the Boston Society of Civil Engineers Mr. J. R. Worcester demonstrates that a rectangular bar bent cold as in straightening may become subject to internal stress up to as much as half that at the elastic limit of the metal. In the case of a 3-in. by 1-in. bar, straightened from a curve with a radius of 12 in., the initial stress would amount to about 15,000 lb. per square inch, in tension on one side and in compression on the other side. This condition involves a tendency for the bar to bend out of line, especially if it is used under axial compression, and should the elastic limit be passed the bar may fail by buckling. The author concludes that it is very desirable to eliminate cold straightening from the workshop treatment of steel for use as struts of any kind.

THE BUILDING TRADE.

RECOVERY OF CONTRACT PRICES WITHOUT THE ARCHITECT'S CERTIFICATE.

(FROM A LEGAL CONTRIBUTOR.)

THE contractor who has undertaken to carry out work "subject to the approval of the architect" sometimes finds himself in the awkward position of having failed to secure that approval. The result is that he fails to obtain the certificate, which, according to the terms of the contract, is a condition precedent to the payment of any part of the contract price. In these circumstances he not unnaturally asks himself, In what circumstances may the certificate be dispensed with?

It is clear law that in the ordinary course a certificate may be made a condition precedent. As Lord Justice Mellish said in Sharpe *v.* San Paulo Railway (1873 L.R.B. Ch. 597), "A contract may be so framed as under ordinary circumstances to take away the jurisdiction of the courts of law and courts of equity to determine what is the amount payable under the contract. Wherever, according to the true construction of the contract, the party only agrees to pay what is certified by the architect or what is found to be due by an arbitrator, and there is no agreement to pay otherwise—that is to say, in every case where a certificate of the engineer or arbitrator is made a condition precedent to the right to recover, then the Court has no right to dispense with that which the parties made a condition precedent, unless, of course, there has been some conduct on the part of the architect or employer which may make it inequitable that the condition precedent should be ruled upon."

It is to the proviso to this very clear statement of the law that the harassed contractor will turn in order to escape from what he considers the unjust decisions of the architect. It is obvious that if a certificate has been fraudulently or collusively withheld, or if there has been a prevention by the employer, whether by collusion with the engineer or otherwise, a certificate may be dispensed with.

In this matter of granting certificates an architect is in a position very similar to that of an arbitrator. He must be impartial as far as he can be consistently with the natural bias due to his position as adviser of one of the parties, and he must do nothing inconsistent with a judicial position. Any bias, therefore, unknown to one of the parties, or any conduct inconsistent with his judicial capacity, may enable an aggrieved party to claim to dispense with his certificate.

The offence may consist of not merely withholding a certificate, but in granting a certificate for less than is justly due. For instance, in a case which concerned an architect and a local authority (Page *v.* Llandaff Rural District Council (1901) 2 Hudson's "Building Contracts," 347), it appeared that the plaintiff was employed by the defendant Council to construct certain works. In the contract it was provided that "the decision of the surveyor with respect to the value, amount, state, and condition of any part of the works executed, or of any part thereof, altered, omitted, or added, and also in respect to any and every question that may arise concerning the construction of this contract or the said plans, drawings, specification, or bill of quantities, or schedule of prices, or the execution of the works hereby contracted for, or in anywise relating thereto, shall be final and without appeal." Disputes arose and, after protracted negotiations, the surveyor gave his final certificate. The plaintiff brought an action against the Council, in which he alleged that the surveyor's final certificate "was not honestly made or given in the exercise of, or reliance upon, his own judgment, but was made and given by reason of the interference of, and in obedience to, the directions and orders of the Council." It was held that, as the Council had interfered (though without any fraud on their part) with the surveyor in the exercise of his functions as quasi-arbitrator between the parties, the final certificate was not conclusive and binding upon the contractor.

The most recent case on this subject is Roberts *v.* Hickman, 1913 A.C. 229, which, strange to say, was not officially reported until it reached the House of Lords. In that case a building contract provides that the decision of the architect of the building owners on all matters in relation to the work should be final and that payments should be made on the certificate of the architect. The architect, under a misapprehension of his position, allowed his judgment to be influenced by the building owners and improperly delayed issuing his certificates in accordance with their instructions. After the completion of the work and the expiration of the period of maintenance the contractor sued the building owners for the final balance alleged to be due under the contract, but the final certificate was not issued until after the commencement of the action.

It was held that the building owners were precluded from setting up as a defence to the action either that the issue of the certificate was a condition precedent to the bringing of the action or that the certificate was conclusive as to the amount of the claim.

Mr. Hudson, in his "Building Contracts," divides the cases in which a certificate may possibly be dispensed with into four classes, viz., (1) Those where fraud or collusion is alleged; (2) those where fraud only is alleged; (3) those where, before or after the giving of the certificate, the engineer has shown that he will not be, or is not, impartial; (4) those where the employer interferes with the engineer either before or after the giving of the certificate.

1. *Cases of Fraud and Collusion.*—It is obvious that fraud and collusion between the employer and the architect are followed by injustice to the contractor, and it is hardly necessary to quote authorities in support of the proposition that such conduct vitiates a certificate when granted or justifies the contractor in suing the employer direct. When no certificate is forthcoming, the difficulty is to prove the fraud and collusion. As illustrating the circumstances in which a jury will be ready to find collusion, reference may be made to a case heard in the Colony of Victoria. There an action was brought by contractors against certain water Commissioners on an engineering contract. The plaintiff alleged due performance and that the engineer fraudulently and in collusion with the employers had refused to certify. It appeared that the Commissioners had passed a resolution that a certificate should be given; the engineer professed to comply, but gave a document which was useless as a certificate, expressing his willingness to certify if he were personally released from all responsibility. The contractors applied to the Commissioners to dismiss the engineer and appoint another who would act according to the contract. This the Commissioners refused to do. The jury found that there was collusion. It was held that, though the engineer refused to give a final certificate, it was open to the jury to find from his acts and conduct that the work had been completed to his satisfaction, but that the contractor cannot recover from the employer unless it be alleged and proved that the certificate was refused in collusion with the employer. It was also held in the same case that while an engineer to whose satisfaction work is to be done is not an arbitrator, but a skilled agent of the employer, he nevertheless owes a duty to the contractor as well as to the employer, and is bound to act fairly towards both parties (Young *v.* Ballarat Water Commissioners (1879), 4 Vict. L.R. (Law) 306).

2. *Where Fraud Alone is Alleged.*—Where fraud on the part of the employer leading to the withholding of a certificate can be proved, he may be made liable, but he cannot be held liable for the fraud of the architect unless he also colluded with him. In the case of Smith *v.* Howden Union Rural Sanitary Authority and Fowler (H.B.C. 151), it appeared that the plaintiff by agreement in writing dated August 5, 1885, contracted to construct certain specified sewers for the defendant union for the price of £2,616, payable on certificates by the engineer of the union. There was also a clause that extras must be ordered in writing. The plaintiff commenced working in August, 1885, and, though the work was not a success, proceeded according to the specification and following the directions of the engineer, and was not in default when, on July 10, 1886, the defendants took possession of the works and excluded the plaintiff. At that time £2,318 only had been paid to the plaintiff.

The plaintiff sued for the balance of the contract price and for money due for extras. Part of the extras had not been ordered in writing. It was found by the Referee that the engineer had *mala fide* and wrongfully refused to certify, but that the defendant union had not colluded with the engineer. In these circumstances it was held that the plaintiff's remedy was damages for wrongfully preventing the plaintiff from completing the contract work by taking possession wrongfully, the measure of damages being the amount to which presumably the plaintiff would have been entitled if the work had been completed, and had the engineer thereupon issued such certificates as he ought to have issued. In the result the plaintiff had judgment for a large amount of extras never certified for. Fraud and collusion will, however, be inferred where the employers know of the architect's wilful refusal to certify and take advantage of it. Thus in the case of Kellett *v.* New Mills Urban District Council (1902 H.B.C. 329), the plaintiff agreed to do work for the defendants to the satisfaction of the engineer, and the defendants agreed to pay the plaintiff upon the certificate of the engineer. The engineer never addressed himself to determine and certify, but wrongfully refused or wrongfully and unreasonably delayed so to determine and certify, and the defendant took advantage of his refusal and delayed payment. Fraud was not alleged. Held that the plaintiff could recover from the defendants without a certificate.

Mr. Justice Phillimore said: "I think they knew here not merely that their man was not certifying, but that he was going through the process of pretended inquiry, which was almost worse than his refusing to inquire; and I think that they were bound in those circumstances to have taken some very decided action on their part."

3. *Where the Architect has shown that he will not be, or is not, impartial.*—Although it is often pointed out in legal text-books that a contractor cannot expect absolute impartiality from an engineer on the ground that when he signs the contract he knows that the engineer is employed and paid by the employer, yet engineers must show no bias in coming to a decision about a certificate. In Pawley *v.* Turnbull, 1861 (3 Giff. 70), an architect took possession under a forfeiture clause, and finished the buildings. The builder filed a bill against the building owner and the architect, alleging unfair conduct on the part of the architect. It was held that it was necessary for the plaintiff, in order to succeed, to have proof of grossly improper conduct on the part of the architect that the conduct of the architect (without imputing fraud) had not been of that discreet, impartial, and fair description which it ought to have been; and decreed payment to the plaintiff of the balance due under the contract, subject to a deduction for non-completion, relieved the builder from liquidated damages, declared the architect's certificate was not binding, and ordered both defendants to pay the costs of the suit.

Fraud on the part of an architect and collusion with the employer may also be sufficient to support an action by the contractor against the architect alone for damages occasioned by the withholding of the certificate. For instance, in Ludbrook *v.* Barrett (1877), 46 L.J.C.P. 798, when under a building contract it was a condition precedent to payment that the builder should execute the works to the satisfaction of the named architect. Held that an action could be maintained against the architect for collusively, fraudulently, and to the injury of the builder refusing to certify that he was satisfied with the works.

4. *Interference by the Employer.*—The last case in which the contractor is entitled to ignore the provisions of the contract as to a certificate, and to sue the employer direct, is that in which the employer interferes with the architect. The question whether there

has been such interference is, of course, one of fact for a jury to decide. For instance, where an action was brought by a builder against a building owner under a contract by which the architect's certificate was a condition precedent to payment, plaintiff alleged that the employer after the work was completed complained to the architect of alleged defects therein, and told him he should not accept his certificate unless those defects were attended to and remedied. The defendant denied this, and produced evidence to the effect that there had been no communication at all between the defendant and the architect. Watkin Williams, J., to the jury: "If you think that the architect, acting upon his own judgment, withheld this certificate you must find a verdict for the defendant. If, however, you are of opinion that the withholding of the certificate was due to the improper interposition of the defendant, and that he prevented the architect from giving his certificate, you must find a verdict for the plaintiff." The jury found a verdict for the plaintiff (Brunsdon *v.* Beresford, 1883, 1 Cab. and El. 125).

It remains to consider the other circumstances in which the certificate of the architect will be regarded as dispensed with. If, for instance, the contractor is prevented from carrying out the work by the act of the employer, or by any act of the architect for which the employer is in law responsible, the certificate will not be a condition precedent. The following may be cited as illustrations: Failure by the architect to deliver plans, the absence of which prevents the contractor getting on with his work; dismissal of the architect; failure to invest the architect with the necessary authority to grant certificates.

NATIONAL ASSOCIATION OF MASTER PLASTERERS.

The National Association of Master Plasterers held their half-yearly meeting at Bridlington on July 7, and was the occasion not only of a pleasurable outing, but also of an interesting ceremony. The members, who had their wives and lady friends with them for the week-end, and before the business of the day commenced, met to invest the President, Mr. H. H. Hodkin, of Sheffield, with a presidental collar and chain, Mr. Johnson, of Mirfield, performing the ceremony. Afterwards, on the invitation of the President, the party were photographed as a souvenir of the occasion.

LONDON MASTER BUILDERS' ASSOCIATION.

THE ordinary meeting of the Council was held on the 17th inst. at Koh-i-Noor House, Kingsway, W.C.; the chair, in the absence of the President, being occupied by Mr. Edmond J. Hill, Junior Vice-President.

Reports of the Special Committee were received, and instructions issued thereon.

Correspondence relating to matters of great importance to the trade was considered.

A considerable number of new members were elected.

The Association are entertaining the members of the National Federation of Building Trades Employers of Great Britain and Ireland on the occasion of the half-yearly meeting being held in London next week.

The members of the Council are invited to a dinner at the Hôtel Métropole on Tuesday evening, and the general members are being entertained at a reception at the Earl's Court Exhibition on Wednesday afternoon.

WAGES IN THE BUILDING TRADE.

ABERDARE.—The plasterers in this district have returned to work pending the consideration of the case by the Local Joint Committee.

BRADFORD.—Advances of ½d. per hour have been granted to the bricklayers (9d. to 9½d.) and masons (9d. to 9½d.), as from August 1 next.

DARLINGTON.—The dispute which had arisen between the plasterers and the master builders over the wages question has been amicably settled, the employers having agreed to advance the men from 9d. to 9½d. an hour.

DARWEN.—Over one hundred joiners came out on strike on Saturday, July 12, the date of expiry of a six months' notice given to the employers. The demand of the men is for 1d. an hour increase in wages, which the employers have refused to concede.

DONCASTER.—The builders' labourers are out on strike for an increase in wages of 1d. an hour (6d. to 7d.). The demand of the plasterers for an increase in wages has been referred to the National Joint Committee of Appeal, and the case will be heard on the 28th inst.

HUDDERSFIELD.—An advance of ½d. an hour has been granted to the slaters (9d. to 9½d.), as from July 1, with a further ½d. on May 1, 1914.

MONMOUTHSHIRE.—The whole of the masons and bricklayers in the eastern valleys of Monmouthshire ceased work on July 5, in support of their demand for an increase of ½d. an hour in their wage rate. The present rate is 8½d.

RUGBY.—Sir Stafford Howard, the arbitrator appointed by the Board of Trade, has issued his award to the parties concerned. The plumbers, plasterers, painters, and labourers asked for an advance of 1d. per hour. The arbitrator has decided that the men shall receive ½d. an hour increase from August 1, and a further ½d. an hour on January 1, 1914.

SELBY.—The bricklayers and builders' labourers have gone out on strike (for an increase in wages), at one hour's notice, although the working rules provide for six months' notice being given.

SHEFFIELD.—An advance of ½d. an hour has been granted to the builders' labourers as from August 1 next. A code of working rules has also been agreed upon.

SHREWSBURY.—Sir E. Stafford Howard, the arbitrator appointed to decide matters affecting carpenters and joiners and bricklayers, has issued his award. On the question of wages the arbitrator decided that the rate shall be 8½d. per hour as from the date of resumption of work up to December 31, 1913, and after that 8¾d. per hour.

YORKSHIRE HEAVY WOOLLEN DISTRICT.—The plasterers in this district have been out on strike since June 1 for 1d. an hour increase in wages.

STAFF DINNER.

THE thirty-seventh annual staff outing of Messrs. Higgs & Hill, Ltd., took place on Saturday, July 19. The party, numbering about eighty, entrained at Waterloo Station in the early morning and proceeded to Hampton Court, the guests of the party including several well-known architects and surveyors. Arriving at Hampton Court, the party boarded the launch (*La Marguerite*) and proceeded up river to Windsor, where dinner was served at the White Hart Hotel. After the usual loyal toasts, speeches were made by the directors touching on the building trades, and co-operation, and good feeling existing between the firm and their staff, some of whom had spent over fifty years in its employ (an achievement becoming more rare in these days of hustle and competition). The party reassembled on the launch and proceeded again on the river in the direction of Clevedon Woods. Tea was served on board and a musical entertainment of high merit was given by the staff and visitors. Returning to Windsor the party left for London after a most enjoyable day.

RATES OF WAGES IN THE BUILDING TRADE.

The following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur:—

——	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Newcastle	10	10	10	10	9½	9	9	6½	6½	6½
Sunderland	9½	10	9½	9½	9½	—	9	6½	6½	6½
Darlington	9	9½	9	9-9½	9½	8	7½	6½	6½	6½
Stockton-on-Tees	9	10	9½	10	9½	9	8½	6½	6½	7
Bradford	9	9	9	9	9½	9	8½	6½	6½	6½
Halifax	9	9	8½	8½	8½	8½	8½	6½	6½	6½
Hull	9½	9½	9½	9½	9½	9½	8½	7	7	7
Leeds	10	10	9½	9½	9	9½	8	7	7	7
Sheffield	9½	9½	9½	9½	9	9½	8	6	6	6
York	9	9½	8½	9½	9½	8½	7½	6½	6½	6½
London	11½	11	11½	11½	—	11	8 upwards.	7½	7½	7½
Brighton	8-9	8	8	—	—	—	—	—	—	—
Portsmouth	9	9	9	9	—	8	7½	6½	6½	6½
Southampton	8	9½	9	8	—	9	8	6½	6½	6½
Maidstone	8½	8	8	—	—	8½	7½	5½	5½	5½
Bristol	9½	9½	9½	9½	—	9½	9	6½	6½	6½
Plymouth	8½	8½	8½	8½	—	8½	7½	5½	5½	5½
Bath	7½	7½	8	8	7½	7½	7	5-5½	5-5½	5-5½
Cheltenham	8½	8½	8½	8½	—	8½	7½	5½	5½	5½
Exeter	8	8	7½	7½	7½	7½	6½	5	5	5
Gloucester	7½	8½	7½	7½	7½	8½	7½	5½	5½	5½
Hereford	7½	7½	7	8	7½	7	6½	4½	4½	4½
Stroud	7	7	7	7	7	7	6½	4½	4½	4½
Blackburn	9½	—	9½	9	—	9½	9½	6½	6½	6½
Bolton	9½	10	10	10	9	9	9	—	—	—
Liverpool	10½	10½	10½	10	10	10	9½	6-6½	6-6½	6
Manchester	10	10½	10	10½	9	10	9½	6	6	7½
Oldham	10	10½	10	9½	8½	9½	9½	6	7	7
Preston	9½	10	9½	9	8½	9	8½	5½	6	6
Birmingham	10	10	10	10½	9	11½	9	7	7	7
Derby	9	9	9	9	9	9	8	6	6	6½
Leicester	9½	9½	9½	10½	9	9	8	7	7	7½
Nottingham	10	9½	9½	10	9	9½	9	7	7	7½
Norwich	8	8	8	8	8	8	8½	5	5	5
Cambridge	9	8½	8½	9	8	9	7	5½	5½	5½
Oxford	8½	8	8	8½	8	8½	7	5½	5½	5½
Southend	9	9	9	9	Piece-work	9	7	6	6	6
St. Albans	8½	8½	8½	10	8½	8½	7½	6	5½	6
Grays	—	10	10	—	—	—	8½	7	7	7
Cardiff	9½	9½	9½	9½	9½	9½	8½	6½	6½	6½
Swansea	9	8½	9	9	8½	8½	8½	6	6	6
Newport	9	9	9	9	8½	8½	8½	6	6	6
Chatham	8	9	9	9	8½	8½	8½	6	6	6
Birkenhead	10	10	10	10	10	10	9½	6½	6½	6½

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERYSTWYTH.—The Building Committee of the Cardiganshire C.C. have approved the plan of the new block at the County School.

Amersham.—The R.D.C. have passed the following plans:—Houses, Kingsway, Chalfont St. Peter, for Messrs. Robinson & Roads; Ley Hill, Mr. W. G. Keen; Rickmansworth-road, Chalfont St. Giles, Messrs. Wood, Jarvis, & Muir; Little Kingshill, Mr. A. Nash; Chiltern-road, Chesham Bois, Mr. W. R. Davison; Golf Club, Seer Green, Mr. C. D. Hamp; two cottages, Forty Green-road, Penn, Mr. H. M. Fletcher; plan of building plots and drainage, Station-road, Amersham, Mr. A. H. Heron.

Aspatria.—House in Station-road for Mr. A. Brown, Harriston.

Aylesbury.—Plans approved:—Five houses off Highbridge-road for Mr. Southam; additions to house, High-street, for the Aylesbury Gas Company; house for Mr. R. Jones, Ascott-road.

Barrow.—The L.G.B. have held an inquiry into the Corporation's applications to borrow £15,900 for public baths, £5,500 for the further laying out of the public park, £850 for sewage works, £3,422 for the extension of Bigger Bank (a stretch of ground facing the Irish Sea and owned by the town), and £7,250 for widening roads in the Salthouse district, Mairfield-lane, etc.

Bedford.—The B. of G. have approved of amended plans for an infirmary, with the addition of a mortuary.

* See also our list of Competitions, Contracts, etc., on another page.

Bethnal Green.—Rebuilding Pritchards-road Infants' School and erection of school for mentally defective children for L.C.C. Education Committee.

Blackpool.—Mr. C. Grundy has given a site for a branch reading room.

Bolton.—The L.G.B. have sanctioned loans of £26,897 for the new electric generating station, of which £2,586 is for buildings.

Bournemouth.—The E.C. have approved of sketch plans for the new infants' department at the Malmesbury Park School.

Bovey Tracey.—Sanatorium under the National Insurance Act (£20,000).

Cheltenham.—The L.G.B. are holding an inquiry into the application of the T.C. to borrow £9,500 for new municipal offices.

Chiddingfold.—Mr. Pocock, of Meslylls, is giving his services as architect and preparing plans for a village hall.

Colwyn Bay.—A scheme for winter gardens and medical baths is under consideration.

Cookham.—The Berks County E.C. have decided to provide a single-room cooking centre at Cookham Rise School at a cost of £315.

Cowes.—Bakehouse and store in Denmark-road for Co-operative Society.

Darlington.—New church at the corner of Marshal-street and Corporation-road.

Derby.—Mr. Andrew Carnegie has offered £10,000 for two branch libraries.

Dodworth.—The U.D.C. are seeking a loan of £1,200 for new offices and store room.

Dunfermline.—The Public Works Loan Board have agreed to lend the T.C. £90,000 for the construction of a new outfall sewer to the Forth.

Durham.—The Council of the Durham Miners' Association have sanctioned the purchase of Red Hills Villa for the purpose of erecting a new Miners' Hall and agents' residences.

Ealing.—Extension of West Ealing branch library.

Edinburgh.—Warrants granted by Dean of Guild Court:—St. Mary's Cathedral Trustees, western towers and spires, St. Mary's Cathedral, Palmerston-place; John Harkness & Peter Harkness, stores, etc., 57, Grove-street; Mr. Robert Walker Millar, double villa, Ravelston Dykes; Mr. P. B. Bretsell, motor house, 42, Balgreen-avenue; Regent Photo. Playhouse, Ltd., alterations, 5, Baxter's-place; Royal Infirmary of Edinburgh, alterations and additions; Sir James Steel's Trustees, alterations, 37, Buckingham-terrace; School Board, school, St. Leonard's (interim warrant for main building); James Allan & Son, Ltd., boot factory, 39 and 41, Watson-crescent; Sir Andrew M'Donald, alterations, 44, South-bridge.

Fishguard.—The Fishguard and Rosselere Railways and Harbour Company have entered into a contract with Messrs. Topham, Jones, & Railton, of Westminster, for the completion of the new harbour works and extension at Fishguard. The contract is understood to amount to £400,000.

Foleshill.—Alterations at workhouse (£734). The U.D.C. have passed the following plans:—Two cottages, Ansty, for Colonel Woolloombe-Adams; four houses, Lythall's-lane, Foleshill, for Messrs. Marshall Bros.; one house, Alderman's-green, Foleshill, for Mr. E. Pearson; two houses, Jacker's-road, Foleshill, for Mr. E. Pearson; two houses, Newtown-road, Bedworth, for Mr. Brooke Peake; two houses and a shop, Nuneaton-road, Collycroft, for Mr. F. Mann.

Grangemouth.—The Dean of Guild Court have approved plans for the extension of the soapwork premises, Lumley-street, of the Scottish Wholesale Co-operative Society, Ltd., at an estimated cost of £2,700.

Ham.—Improvements to nave of parish church.

Haughton-le-Skerne.—House for Miss Atkinson.

High Wycombe.—Plans approved:—Addition to Electroscope Theatre for the company; additions to chair factory, Frogmoor-gardens, for F. Parker & Sons, Ltd.; house, Priory-road, for Rev. J. R. Smith; house and factory, Hatters-lane, for G. J. Young & Co., workshop, Dovecot-road, for E. Harris.

Hornsey.—Plans approved:—Dwelling-house in Fordington-road for Mr. C. Tucker, "Underlee," Southern-road, Fortis Green, N.; house in Woodside-avenue for Messrs. S. R. Hollingdale & Co., Vallence-road, N.; alterations to "The Wrestlers" Tavern, North-road, Highgate, for Lion Brewery Company; conversion of Nos. 17, 21, 23, 27, 29, and 35, Jackson-lane, Highgate, into two separate tenements for Mr F. Collins, 22, Stanhope-gardens, N.

Huddersfield.—The T.C. have decided that the erection of twelve houses on the Commercial Inn site be proceeded with at a capital outlay of £1,400; also that plans be approved for the erection of thirteen additional houses at High Royd, Mold-green.

Inveresk.—Alterations and improvements at the Kirk.

Keighley.—Plans approved by R.D.C. of dwelling-house in Scott-lane, Riddlesden, for Mr. H. Shackleton, and plan of workshop for Mr. T. Millhill at Upwood.

Kensington.—The L.C.C. have approved of additions at Peel-street Studios, on the application of Messrs. S. Barrett & Driver, for Mr. H. A. G. Heathcote; additions to 1, Greville-place, on the application of Messrs. Row, Son, & Mason, for Messrs. C. A. Daw & Son, Ltd.; alterations at 21, Essex-villas, on the application of Mr. Guy Dawber, for Mr. M. Huish; alterations at Nos. 1, 3, and 5, Pembridge-gardens, on the application of Mr. E. S. Iles, for the Metropolitan Railway Surplus Lands Committee.

Langholm.—House for Mr. J. Cairns.

Lewisham.—The L.C.C. have consented to an addition to 207, Hither Green-lane, on the application of Mr. H. Hopton, on behalf of Mr. J. Collingwood; to four houses in Honor Oak-road, on the application of Messrs Scott & Son on behalf of Mr. T. Washbourne; to a cinematograph hall at 14, Westdale-road, on the application of Messrs. Tyler & Hill.

Linthwaite.—Plans approved by U.D.C.:—Rectifying house at Milnsbridge Chemical Works for Messrs. J. W. Leitch & Co.; bungalow at Pymroyd for Mr. Ben Beaumont; extension of main street at Pymroyd for Thomas Avison Exors., and alterations at the Commercial Hotel for Mrs. A. Mack.

Liverpool.—Mr. W. Gordon, of 29, West Derby-road, is applying for the approval of plans for a picture hall at Rice-lane, Walton, with cottages in the rear.

Mansfield.—The T.C. have resolved that sanction be sought to a loan for £12,700 for new schools to be built in Chesterfield-road; £1,020 for temporary schools at Rainworth, and £3,300 for the purchase of land for recreation purposes.

Market Bosworth.—The R.D.C. have purchased land on which to erect twelve workmen's dwellings.

Meriden.—The R.D.C. have passed the following plans:—Brick Works, Castle Bromwich, for Mr. W. H. Winterton; dwelling house, Corley, for Mr. A. Pargetter; cottage, Coleshill, for Dr. Wall.

Newington.—Re-building of St. Mary's School for the managers.

Newmarket.—Motor garage for Messrs. Young & Co.

Nottingham.—Picture palace at end of Arkwright-road and London-road; Mr. W. R. Cleave, architect.

Old Fletton.—Factory for Messrs. Farrow, Ltd.

Orrell.—Plans approved:—Alterations to property in Loch-street for Mrs. Holland.

Paddington.—Alterations at St. Saviour's School for the managers.

Pershore.—The L.G.B. have approved the plans of cottage homes which the B. of G. propose to erect. The R.D.C. have passed plans of four cottages for Mrs. Holland, and have decided to build six themselves in Cropthorne.

Pinner.—The R.D.C. have approved the following plans:—Alteration to premises, Southfield Park, Pinner, Mr. A. J. Smith; additions to house, Southfield Park, Pinner, Mr. J. T. Wells; alteration to drainage, Commercial Travellers' School, Pinner; new drainage plan to Stanmore Cottage Hospital, for Messrs. Kirby & Sons; plans of new shop front to old post-office, High-street, Little Stanmore, were referred back for approval by the Middlesex C.C.

Plymouth.—The St. Thomas B. of G. have passed plans for a tramps' ward.

Rayne.—It has been decided to apply for a faculty to extend the chancel of Rayne Church, to build a new vestry, and to place another bell in the tower.

Rhyl.—New jetty, extension of marine promenade, and renovating of the pier for the U.D.C.

Rotherham.—The Y.M.C.A. scheme for the building of new premises in Doncaster-road is now ready for further advancement. In the last few days the debt on the present habitation has been wiped out.

Rotherhithe.—The L.C.C. have approved of an iron and steel addition to premises in Rotherhithe-street, on the application of Messrs. H. J. Enthoven & Sons; to re-building of the premises of the City of London Brewery Company in Jamaica-road.

Ruislip-Northwood.—Plans approved by U.D.C.:—House, Kewferry-road, for Mr. J. Whittle, submitted by Mr. F. W. Bedford; house, Hilliard-road, for Mr. W. Piersenne, submitted by Mr. S. Cooper; motor garage, Frithwood-avenue, for Mr. A. Taylor, submitted by Messrs. Swannell & Sly; two houses, Hilliard-road, for Mr. E. Spark, submitted by Mr. J. Shaw; alterations to No. 9, Bank-buildings, Green-lane, for Mr. E. A. Ryder, submitted by Mr. H. Neal; alterations to the Northwood Hotel for and submitted by Benskin's Watford Brewery Company, Ltd.; house, Lime-grove, for Mr. H. P. Bayetos, submitted by Mr. F. Osler; house, Kewferry-road, for and submitted by Mr. F. W. Bedford.

St. Pancras.—The L.C.C. have approved of alterations at 125 and 127, Euston-road, on the application of Mr. E. S. Iles, on behalf of the Metropolitan Railway Surplus Lands Committee.

Shardlow.—The B. of G. have decided to employ an architect to prepare plans for additions to the nurses' home.

Siddal.—£6,900 has now been provided towards the proposed new church.

Slough.—Plans passed by U.D.C. for the erection of a water-cooling tower and engine-room at Chalvey for the Slough and Datchet Electric Supply Company; three houses in Ragstone-road for Mr. H. Atkin; and a house in Lansdowne-avenue for Mr. H. S. H. Brooks.

Southend.—Plans approved:—Two houses, Northview-drive, E. J. Pearce; eight houses, Beaufort-street, C. Wingrave; house, Southborough-drive, H. Lummis; house, Central-avenue, J. Simpson; house, Highcliff-drive, E. Cutler; house, Brightwell-avenue, R. T. Howard; three houses and garage, Beedell-avenue, G. H. Griffiths; house, Thorpe Hall-avenue, A. Temple; two houses, Beaufort-street, J. Sears; school, Hamatel-lane, Southend Corporation; three houses, Tintern-avenue, T. J. Dennis; four houses, Woodfield-road, Knight & Davison; house, Southbourne-grove, T. Wallace; two houses, Central-avenue, W. Bray; nine houses, Bournemouth Park-road and North-avenue, J. Calcutt; five blocks of flats, Beresford-road, E. A. Cave; three houses and store, Shakespeare-drive, F. Wiggins; house, Thorpe Bay-gardens, C. Matthews; two houses and garage, Church-road, J. Calcutt; bungalow, Chalkwell Park-drive, F. Goldsworthy; two houses, South-avenue, J. Kingsley; houses, Shakespeare-drive, W. J. Lincoln; three shops, Grove-place, M. E. Ramuz; seven houses, Ramuz-drive, F. Hicks; five conservatories, Glenwood-avenue, Wells & Barham; ten houses, Westbourne-grove, R. J. Snell; two houses, Colbert-avenue, H. R. Wilkinson; eight houses, Brightwell-avenue, R. Rudd; flats, Station-road, Barley & Escott; cinema, Leigh-road and Beedell-avenue, H. A. Barnes; four houses, Woodfield Park-drive, R. N. Marrable.

Spilsby.—Plans passed by R.D.C.:—New cottages, Spilsby, for Earl Ancaster; bungalow for Mr. Ailsby, Chapel St. Leonard's; addition to house, Sutton-on-Sea, for Mr. Spurway.

Stratford-on-Avon.—Plans have been approved by the R.D.C. for a scouts' hall to be built by Miss Mitchell at Claverdon; cottage at Claverdon for Mr. Mitchell; house on the Banbury-road for Mr. G. J. Emms; house and dairy at Compton Verney for Board of Agriculture.

Swanage.—Plans passed:—Six fishermen's huts at Peveril Point for Lord Eldon, by Messrs. Parsons & Hayter; three shops in Station-road by Messrs. Parsons & Hayter; school on the Mowlem Estate for Mr. F. G. Hickson, by Messrs Barnes & Pond.

Swansea.—The T.C. are seeking powers for a light railway up Mount Pleasant, with the object of developing an estate owned by them for building purposes.

Theale.—Plans approved for new Congregational church; house and shop for Mr Cumber.

Thurston.—The L.G.B. have given sanction to the Thedwastre R.C. borrowing £656 for the provision of dwellings.

Tilbury.—The Housing Committee of the U.D.C. has approved plans for the laying-out of the thirty houses proposed to be erected in the north ward, and for the 102 houses for the south ward.

Tiverton.—Conversion of old gaol into technical institute.

Walsall.—The Borough Surveyor has been instructed to prepare an estimate of public baths for the Bloxwich District.

Wandsworth.—The L.C.C. have consented to the erection of houses in Magdalen-road on the application of Messrs. Withers & Meredith, on behalf of Mr. J. Carmichael.

Westminster.—Buildings to abut upon Deans-yard and Great Smith-street for the Dean and Chapter of Westminster.

Winchester.—A L.G.B. inquiry has been held into the Council's application to borrow £4,300 for improvements at the Guildhall by the provision of offices, additions to the library, and School of Art.

Workington.—New chemical works for Messrs. Brotherton & Co., of Leeds.

Yeovil.—"Westland" is the name given to a garden village which it is proposed to build about one mile to the west of Yeovil, on a site adjoining the Yeovil and Durston branch of the Great Western Railway. Plans have been prepared drawn by Messrs. Petter & Warren, architects showing how it is proposed to lay out about 80 acres of land in the parish of Preston Plucknett, adjoining the large engineering works which are now being erected by Messrs. Petters, Ltd., oil-engine manufacturers, which will employ from 500 to 1,000 hands.

GENERAL BUILDING NEWS.

NEW BUILDING AT CARDIFF.

A new Welsh Medical School building is to be erected on the site of the old college in Newport-road, Cardiff. The architect for the work is Colonel E. M. Bruce Vaughan.

NEW SCHOOL AT HIGH WYCOMBE.

Mr. Arthur Vernon is the architect for this new Grammar School, which is shortly to be erected at an estimated cost of £17,530. The new building will include an artroom, lecture halls, assembly hall, etc.

TRADE NEWS.

Boyle's latest patent "air-pump" ventilators and latest improved air-inlet brackets have been applied to the Wesleyan Chapel and Schoolroom, Prestatyn.

The Borough Fever Hospital extensions, Stafford, are being supplied with Shorland's warm-air ventilating patent Manchester grates by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

In the tendering for the new house, 21, Cowper-road, Acton, the estimate of £443 17s. by Messrs. L. L. Leeder & Co., contractors, builders, and decorators, 96, High-road, Chiswick, was the lowest, and has been accepted.

BUILDING TRADE AMALGAMATION.

The question of bringing about an amalgamation of the unions admitting as members workmen in any branch of the building trade has been discussed at a Conference at the offices of the Parliamentary Committee of the Trade Union Congress, Mr. W. Thorne, M.P., presiding. The Secretary of the Congress, at the close of the Conference, stated that the meeting had been adjourned for two months, but that it was reported that six unions, with a total membership of about 46,000, had balloted in favour of amalgamation. These were the United Builders' Labourers, the Manchester Unity of Operative Bricklayers, the Cave House Painters and Decorators, the United Order of General Labourers (London), the National Association of Builders' Labourers, and the Operative Bricklayers.

BUILDERS' OUTING.

The annual outing of the Bristol Master Builders' Association took place on the 16th inst., when a party of over sixty went on a motor tour from Cheltenham to Tewkesbury, Worcester, Malvern, and Ledbury. Among many of the interesting places visited were the Worcester Potteries, Worcester Cathedral, and Tewkesbury Abbey. The Bristol Master Builders were accompanied by some of their colleagues from Bath and Gloucester.

A MINISTRY OF FINE ARTS.

In addition to the many letters we have received in reference to our suggestion for the creation of a Ministry of Fine Arts, we think it will be of interest to give the following newspaper comments on the subject:—

The London correspondent of the *Manchester Guardian* writes to that paper as follows:—

"A subject that has often stirred those who think about the public side of any aspect of the arts is being raised in an interesting and sensible way by the *Builder*, a journal which has often shown a large understanding of the practical value of art in our national life. In the conclusion of a survey of the various aspects of the subject it has issued an appeal to everyone in favour of the formation of a Ministry of Fine Arts in this country based on the example of France, and it hopes that its efforts will lead to the organisation of a Provisional Committee to accelerate the movement and to bring the matter before the authorities. It intends to organise meetings in the great towns, to appoint lecturers, and to bring the matter before the public on every possible opportunity. Discussion on this subject is certainly very desirable. Taken on its more immediately practical side, the value of the fine arts has impressed itself upon all the great countries of Europe except ourselves. At the same time there is enough money spent in England through national or municipal authorities on art training, museums, art galleries, public monuments, and the decoration of public buildings to demand organised consideration, while the provision of music and more especially the æsthetic side of town-planning and town life generally are all matters that seem to demand the existence of a central authority who would be responsible generally where responsibility is possible and desirable. At the same time—for this is the side on which one looks for the most important developments—it would be a power whose suggestions and advice would be at the service of all parties faced with questions that have to be settled, but in which no one feels any authority behind them to justify the longer view and the prompt action. The commercial value of a Ministry of Fine Arts has certainly been proved in France and Germany. The time has surely come when it is worth consideration in England, and I wish the *Builder* well in its crusade."

A question was asked in Parliament, on Monday, whether the Government would consider the advisability of establishing a Ministry of Fine Arts. The questioner's wording showed that he had in mind the French example. Mr. Lloyd George, who replied for the Prime Minister, answered curtly that it was "not a practicable suggestion." He might, we think, have shown it more sympathy, for it was certainly neither a trivial nor a Utopian one. Of course not every French artistic institution will stand transplanting to our soil. Our neighbours do not do everything better than we, and their ways of reaching excellence are often alien to our genius. But while for this reason projects for our copying the French Academy are likely to remain projects, the French Ministry of Fine Arts is another matter. There is no local or national magic about it, but its success and value are unquestioned, and they are shown mainly in spheres where the English need for improvement is peculiarly marked. As long as we have the ugliest towns, the worst public monuments, the worst ordered public buildings, and the most miscellaneous public art collections in Europe (and we think that few educated and travelled Englishmen will dispute any of these propositions), we have little room for complacency about the results of our present system or, rather, total lack of system. This is indeed only one of many respects in which the old organisation of the departments at Whitehall needs rather thorough overhauling and replanning, if we are to have a public service at once well mapped out from the point of view of those to be engaged in it and adequate for modern needs.—*Daily Chronicle.*

BATHS, BRIGHOUSE.

New baths were opened at Brighouse recently. The baths are centrally situated in Mill Royd-street, and have been erected at a total cost of £5,700. In addition to the swimming-bath, which is of regulation size, there are six slipper and three douche baths. The new building has been designed by Mr. S. S. Haywood, the Borough Surveyor.

COMMERCIAL MOTOR VEHICLE EXHIBITION, OLYMPIA, JULY 18–26.

ALTHOUGH not so attractive to the general public as shows dedicated to the display of pleasure cars, the Exhibition at Olympia is of great practical importance. It appeals not only to those who are interested in traffic questions but also to builders and contractors desiring to keep abreast of the times in respect of road transport incidental to the execution of structural work.

Organised by the Society of Motor Manufacturers and Traders, the Exhibition is representative of all the leading European makers of commercial motor vehicles, and includes exhibits designed for use in every quarter of the globe. While decidedly international in character, the Exhibition is nevertheless a triumphant vindication of the claims made on behalf of British manufacturers, who are decidedly in the front in respect of the range, variety, and excellence of their productions.

The strong demand existing for modern motor vehicles in commerce and industry is shown indirectly by the fact that the whole of the available space on the ground floor and galleries of the hall is completely taken up by exhibits. No fewer than seventy-five firms are showing complete vehicles, chassis, and bodies, more than sixty firms are displaying component parts and accessories, tyre and wheel makers and others bringing up the number of exhibitors to about two hundred.

Our first view of the show was obtained before admission of the public, and it is particularly satisfactory to be able to state that all the stands were then complete, and representatives of the various firms ready for business. The signs of procrastination and unpreparedness so frequently manifested on the opening day of exhibitions at Olympia and elsewhere were entirely absent. These facts constitute welcome proofs of the alert and businesslike methods of British motor firms.

The stands themselves are free from flags, festoons, and other meaningless decorations, and the waggons exhibited are all well tried and commercially successful machines, there being a noticeable absence of experimental vehicles and "freaks."

The progress made by manufacturers is chiefly in the directions of rendering their vehicles still more suited to the requirements of industrial users and of mechanical developments permitting the application of rubber tyres to heavy vehicles. The question of modifications in carburettor design, providing for the use of less costly fuel than petrol for internal combustion motors, has not received so much attention as could have been desired, and the show would be more interesting if the chassis were shown with a rather wider range of body work.

At a first glance it may not appear that any of the vehicles exhibited are specially designed with a view to the requirements of builders and contractors. Still, a little observation will make clear the suitability of many of the chassis for dealing with loads such as are demanded by the class of transport in question, and inquiries at various stands elicited the information that most of the leading firms have supplied waggons of from 3 tons capacity and upwards to building contractors.

In the space at our disposal it is impossible to deal with the exhibits in full detail. We therefore give a general classified review of the types of exhibits under various headings, referring the reader for further particulars to the stands themselves.

Tractors.—Only two firms are showing this type of road locomotive, Messrs. W. Tasker & Sons, Ltd., of Andover, who show their well-known "Little Giant" 5-ton steam tractor; and Messrs. Wallis & Steevens, Ltd., of Basingstoke, also exhibiting a steam tractor of good design.

Steam Waggons.—As in previous years, the waggon with locomotive type boiler still maintains its popularity, and the claims of superheated steam are being advanced in several noteworthy examples shown. The number of heavy waggons now run on rubber tyres is evidence that important developments have taken place in design and construction. Firms exhibiting the "loco" type waggon are Messrs. W. Allchin, Ltd., Northampton; Messrs. Aveling & Porter, Ltd., Rochester; Messrs. Fodens, Ltd., Sandbach; Messrs. Richard Garrett & Sons, Ltd., Leiston; Messrs. W. Tasker & Sons, Ltd.; and Messrs. Wallis & Steevens, Ltd. The principal exhibitors of vehicles with the vertical type boiler are the Leyland Motors, Ltd.; Messrs. J. H. Exshaw & Co., of Shaftesbury-avenue, W., who show the 6-ton Purrey-Exshaw tipping waggon. The Yorkshire Commercial Motor Company, Ltd., of Leeds, show a 6-ton waggon fitted with a unique transverse arrangement of a horizontal boiler, which besides effecting economy of space possesses the advantage of making it almost impossible under ordinary working conditions for the water level to fall below that of the fire tubes.

Petrol Waggons.—An excellent representative collection of petrol vehicles will be found at the Exhibition, in sizes ranging from the light delivery van to the heavy Colonial type waggon. Although the economy of running petrol vehicles of capacities as high as 5 and 6 tons has been questioned, it is obvious from the number of such exhibits that the steam vehicle is not in any way unrivalled even for heavy loads.

As might be expected, the standard type of chassis with the engine arranged beneath a bonnet in the front is more prevalent than the overtype chassis, where the driver is seated over the engine. In the latter, however, considerably more platform area is available for a given length of wheel base, and the vehicle can be turned with greater facility in narrow spaces, a point which will naturally appeal to the contractor.

Although at present somewhat of a novelty in this country the front driven "Mass" tractor chassis possesses distinct advantages, among them being a very low loading line, enabling freight to be carried which might in ordinary cases render the vehicle top-heavy; and the adaptability of this machine, solely as a power unit, to almost any form of lorry.

A system of propulsion which for many years has been in a more or less experimental stage, has been brought to perfection by Messrs. W. A. Stevens, Ltd., whose petrol-electric system has been applied to the omnibuses of Messrs. Thomas Tilling, and recently to some of the London County Council trams. By an ingenious combination of a petrol engine coupled to a dynamo from which the current is transmitted to a motor, the objections inseparable from a mechanical change-speed gear are entirely overcome, and the flexibility of electric traction is obtained without the disadvantages which attend the use of storage batteries. At the present time petrol-electric vehicles are supplied for military purposes, and the current generated can be used for working searchlights, wireless telegraphy, and other purposes, while it is quite possible that the makers may develop a vehicle capable of supplying current for operating various units of a modern contractors' plant, when not employed in transport work.

A chassis embodying many new features is the 2½-ton "Austin," which has a lattice-girder frame of exceptional rigidity, slung so as to insure a low loading line and a low centre of gravity. Owing to the adoption of twin propeller shafts the chassis is left particularly free, the unobstructed area for dealing with useful loads being exceptionally large. It is interesting to note that several of these chassis were employed in the transport of materials for the construction of the new works of the Austin Motor Company, Ltd., at Northfield, Birmingham.

How the heavy commercial vehicle fares under the stress of continual hard work is illustrated in a remarkable manner by one of the exhibits on the stand of the Daimler Motor Company, Ltd., Coventry. A 3-ton chassis, which until recently was still in service as a lorry, has been dismantled in order to show the condition of the working parts after completing 26,000 miles. The absence of any appreciable wear of the vital part is an undoubted testimonial to the quality of the commercial vehicles made by this firm.

In addition to a useful range of vehicles shown by Commercial Cars, Ltd., we may mention an appliance worthy of attention by all who have to buy liquid fuel for internal combustion engines. We refer to the Southey Oil Gas Producer, by the aid of which an engine can be run efficiently on ordinary paraffin at a cost of 6·4d. per gallon without giving off objectionable fumes.

Tipping Waggons.—One prominent feature of the show is the care which has been given to the design of various forms of tipping waggons, enabling loads to be deposited with great

dispatch. These may be divided into two classes, one for emptying the load at the end of the chassis, and the other for emptying it at either side.

The 5-ton Hallford waggon, shown by Messrs. J. & E. Hall, Ltd., of Dartford, is fitted with a screw-operated end tipping gear, and vehicles of this type have been supplied to the Sheffield Corporation, the Kent and other County Councils. A special end-tipping gear which can be operated either by the engine or hand as desired, is fitted to the steam waggon exhibited by the Yorkshire Commercial Motor Company, of Leeds. Upon the underside of the body are fitted brackets carrying rollers, which run in guide channels fitted upon the top of the chassis frame.

On the Purrey-Exshaw waggon the side-tipping body is operated by a small hydraulic jack, connected with a small pump arranged at the side of the machine, the gear permitting the body to be tipped on either side of the vehicle as desired. A feature of the side-tipping body fitted to a 5-ton waggon, exhibited by Mr. H. Buessing, of Brunswick, Germany, is the provision of two separate compartments, either of which can be tipped independently.

Hauling Gears.—Many of the vehicles shown are fitted with hauling gears which, though primarily intended to enable a machine to extricate itself from bad ground, may also be used with advantage in connection with small jib cranes to assist in loading and unloading, and also for hauling a trailer up steep inclines when necessary.

Wheels, tyres, and accessories are exhibited in the gallery of the hall, where the makers and users of commercial motor vehicles will find plenty to interest them. The exhibits are so numerous that we cannot attempt to deal with them in detail. Taken as a whole, the Exhibition is quite worthy of the great industry it represents, and forms a convincing demonstration of the great progress that has been made during recent years in the manufacture of mechanically-propelled vehicles for commercial and industrial purposes.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. Cyril Cobb, Chairman, presiding.

Loans.—The Finance Committee recommended and it was agreed to make loans to Borough Councils as follows:—Bermondsey, £8,682 for electricity undertaking; Lewisham, £2,295 for paving works; Shoreditch, £1,906 for street improvement; Southwark, £4,500 for paving works; and Woolwich, £8,098 for paving works.

Reinforced Concrete Regulations.—The Building Act Committee recommended that the seal of the Council be affixed to two copies of the regulations with respect to the construction of buildings wholly or partly of reinforced concrete and with respect to the use and composition of reinforced concrete in such construction.

New County Hall.—The Establishment Committee report that the elevations to the internal areas in each of the sections A and B of the new County Hall are to be faced with white glazed bricks instead of with ordinary stock bricks, and also that the elevations to the internal areas in sections C and D of the new building are to be built with white Suffolk bricks instead of the ordinary stock bricks.

New Railway Station.—In a report of the Housing of the Working Classes Committee the following recommendation is made:—That representations be made to the Great Western Railway Company with a view to the provision in the vicinity of the Old Oak Estate, in or near Duncane-road, Hammersmith, of a station or a halt on the branch line about to be constructed from Ealing to Shepherd's Bush.

PARLIAMENTARY NOTES.

Ministry of Fine Arts.

Mr. Lynch on Monday asked the Prime Minister whether, having regard to the growing interest in art throughout the nation, and also in view of the fact that the encouragement of art and the care of art treasures are now left to a number of separate bodies, such as trustees of galleries and various official boards and departments, he would consider the advisability of establishing an office whose function shall be to control matters connected with fine arts, and which shall be directed by a Minister responsible to Parliament.

Mr. Lloyd George replied that the Prime Minister did not think this was a practical suggestion.

Admiralty Arch.

Answering Mr. Bird on Tuesday, Mr. Wedgwood Benn stated that several conferences had taken place between representatives of the London County Council, the Westminster City Council, and the First Commissioner of Works with regard to the approach to the Admiralty Arch. They had agreed to a scheme which met with the First Commissioner's approval, and the Government had undertaken to contribute one-third of the necessary cost.

Westminster Hall.

Sir J. D. Rees asked if the representative of the Chief Commissioner of Works could give any information regarding the repairs in progress to the roof of Westminster Hall, and whether the roof of the building is in danger.

Mr. Wedgwood Benn said that the examination is proceeding, and a complete survey is being made, but no repairs have yet been undertaken. The roof is not in immediate danger.

Regent-street Quadrant.

Mr. Boyton, on Monday last week, asked whether a design for the Regent-street Quadrant had been prepared for completing the rebuilding; and whether, in view of the fact that the Quadrant, from its original conception, had had an architectural unity and dignity which had given an especial character and interest to that part of London, these facts had been an instruction to the architect or architects entrusted with the design.

Mr. Runciman replied that a design was submitted a short time ago by architects acting for lessees of premises in the Quadrant, but it was not considered by the Commissioner of Woods to be satisfactory, and the matter was receiving further consideration. No architect had been entrusted by the Commissioner of Woods with the design, and no special instructions had been issued, but the recommendations of the recent Committee on the subject of the completion of the Quadrant were known to the architects, who submitted the design he had mentioned.

Mr. Boyton further asked if, when architects were appointed, would the design include the County Fire Office and the block of buildings facing Piccadilly Circus and Piccadilly, or would it be prepared in accordance generally with the Committee's report.

Mr. Runciman said he could not answer that question without notice.

Delhi.

Questioned by Mr. King as to whether buildings other than those to be built by the selected architects at Delhi would be given to architects chosen by competition, Mr. Montagu replied that the Secretary of State had no exact information as to the intentions of the Government of India in the matter, but he assumed that the erection of other buildings could not be entered upon until the alignments of the streets and roads and other pending questions had been finally settled by the Delhi Executive Committee. The Government of India had stated their wish to adopt competition in some form or other of these buildings.

Stafford House.

In reply to Mr. King, Mr. Wedgwood Benn stated that possession of Stafford House had already been given to the Government, and no delay will occur in moving thither the collection of the London Museum. The First Commissioner was informed that no great structural alterations were necessary, and in any case he would not approve important changes without submitting them to the House.

Undeveloped Land Duty.

Sir J. D. Rees asked the Chancellor of the Exchequer whether a builder who bought an estate for development by building, but could not borrow the necessary capital and could not, except at a heavy loss, sell the estate he bought, was liable to pay undeveloped land duty; and, if so, would the law be amended so as to absolve a man from being taxed under such circumstances.

Mr. Lloyd George replied that, subject to the exemptions and allowances granted by law, undeveloped land duty was chargeable in respect of the site value of undeveloped land, and was payable by the owner for the time being. He did not consider that any amendment of the law was called for in the class of case indicated by the hon. member.

LEGAL CORRESPONDENCE COLUMN.

Note.—Answers to inquiries in this column are furnished gratuitously, and strictly on the understanding that no legal liability or responsibility of any kind is accepted or incurred thereby. Correspondents who desire to make use of this column, while supplying their names and addresses in full to the Editor, should also give a nom-de-plume under which the inquiry can be answered.

"FORTY YEARS A SUBSCRIBER."—*Credit Notes.*—On the facts, as stated by our correspondent, it appears to us that he would have a good answer by way of counterclaim or set off to the full amount of the claim in question, and that the credit notes given could not be repudiated. We assume that the correspondent purchased all the contractual rights of his vendor, and we also assume that the credit notes were made out in favour of our correspondent, the purchaser. The position, of course, may be affected by the correspondence, which is not before us.

W. & M.—*Building Tenders.*—In the absence of express agreement, there is no obligation on the parties inviting tenders to accept the lowest tender. We regret, therefore, that our correspondents would have no claim for their expenses.

LAW REPORTS.

Wontner Smith *v.* Streatfield and others.

MR. JUSTICE BANKES, on Wednesday, July 23, gave his judgment in the action of Smith *v.* Streatfield, in which the plaintiff—architect and Diocesan Surveyor—had sued Canon Streatfield, of Goddington Rectory, for libel in a pamphlet. The plaintiff also sued the printers of the pamphlet, the Robert Spennell Press, of Warwick. The jury had awarded the plaintiff £50 damages, and questions had arisen upon the pleas of privilege put forward by the defendants.

Mr. Justice Bankes, who had sat to hear the arguments on Saturday last, now entered judgment against both the defendants for £50. A stay as regards costs was granted to the printers upon the usual terms, and a stay refused in the case of the other defendant.

KING'S BENCH DIVISIONAL COURT.
(Before Mr. Justice AVORY and Mr. Justice LUSH.)

London City & Midland Bank *v.* the Hendon Urban District Council.

ON behalf of the London City and Midland Bank, Mr. Macmorran, K.C., last week moved *ex parte* for a rule *nisi* for a mandamus, calling upon the Hendon Urban District Council to show cause why they should not approve plans for a branch of the bank proposed to be erected in the district. The point involved, he said, was a very short one. The site abutted on Finchley-road in one direction, and on Golder's Green-road in another, and the local authority had refused to pass the plans on the ground, as they said, that the air space stipulated in the by-laws was provided for at the side and not at the rear of the building.

Mr. Justice Avory: Has it ever been held that, if you have two fronts you must necessarily have two rears?

Counsel: I think not. It is not contended here that there must be two air spaces, but I suggest that the matter is the purest technicality.

The rule asked for was granted.

KING'S BENCH DIVISION.
(Before Mr. Justice SCRUTTON.)

Property Owner and Local Authority: Saville *v.* Acton Urban District Council.

THE hearing was concluded on July 18 of an action brought by Mrs. Jane Saville, a married woman, of Lostwithiel, Cornwall, against the Acton Urban District Council, to recover damages for injury sustained to her premises, Nos. 63 and 65, Church-road, Acton, W., of which she is the owner.

Mr. Alexander Macmorran, K.C., and Mr. J. D. Crawford appeared for the plaintiff; and Mr. Clavell Salter, K.C., and Mr. E. J. Naldrett represented the defendant Council.

The plaintiff's case was, that at the rear of Nos. 63 and 65, Church-road, Acton, is a "Provided" School belonging to the Council as the Education authority. Shortly, the allegation was, that the defendants, as the owners of the school, had allowed the drainage system to be so defective that water and sewage had percolated through into the premises belonging to Mrs. Saville, causing her damage. It

appeared that Mrs. Saville's premises had been used by her husband for many years for the purposes of the business of a baker and confectioner. Afterwards they were let to his son, who, in consequence of the damage done to the bakehouse (it was alleged), lost his business, and had to execute an assignment for the benefit of his creditors. He gave up possession of the premises to his mother, who complained she had been unable to let them by reason of the percolation of moisture and sewage.

On behalf of the District Council it was advanced that, when the sewer was in use there was no escape of the contents. It was suggested that the cause of the trouble was the clay subsoil in the gravel and the absence of a damp-course in the walls of plaintiff's premises. It was also alleged that her premises were dilapidated, and that plaintiff's loss was attributable to causes over which the defendants had no control.

The witnesses on both sides gave evidence at considerable length, and the Judge, at the close of a speech by Mr. Macmorran, summing up the case for the plaintiff, said that as there were points he wished to consider, he would defer judgment.

OFFICIAL REFEREE'S COURT.

(Before Mr. MUIR-MACKENZIE.)

Engineer's Claim against Captain: Monro *v.* Behrens.

THE hearing was concluded last week of an action brought by Mr. Kenneth Neal Monro, a civil engineer and contractor, with offices in London and Penzance, against Capt. T. T. Behrens, of the Royal Engineers, stationed at Woolwich, from whom he claimed £145 7s. 9d., balance of an account alleged to be due in respect to the construction of a road on Capt. Behrens's property, Porth-en-alls, at Marazion, near Penzance. The captain alleged, by defence, that the plaintiff did not complete the road according to the terms of the contract, and, while denying liability, the captain paid £19 as sufficient, according to him, to satisfy the claim. He also counterclaimed for £53 9s. 2d., alleging breach of contract on the part of the plaintiff in not having finished the road according to the specification. The plaintiff, on the other hand, denied the breach, and said that he had done the work properly.

Evidence was given on both sides.

Mr. Monro, the plaintiff, said that he had constantly supervised the work, and that the measurements were in order. Corroborative evidence was given to that effect. On the other hand, the defendant, who stated that he was accustomed to supervise and check contractors' work on a War Office schedule, raised questions concerning the levels and the gradients, and called his brother, Mr. Bryan Behrens (who had represented him at Marazion while he was away on military duties); Mr. J. F. Jodrell Reynolds, a civil engineer, practising at Old Queen-street, S.W.; and Mr. Walter Nightingale, a quantity surveyor, of 87, Thurleigh-road, S.W.

At the conclusion of the evidence and the arguments, the Official Referee reserved judgment, remarking he must take a little time to consider the matters which had been very ably advanced by each side.

OBITUARY.

Mr. J. Vickers-Edwards.

The late Mr. J. Vickers-Edwards, of Wakefield, was appointed as the West Riding County Council Architect (having been previously the Surveyor), ten years ago. He made the plans and designs for a large number of Council and provided schools, asylums, cottage homes, police-stations, and similar public and private buildings in the county. Of these we may mention the following:—Storthes Hall Asylum at Kirkburton, near Huddersfield, with the "acute hospital" and cottage homes, farm buildings, etc., erected in 1900-8, for upwards of 2,000 patients, at a cost of about £500,000; Inebriates' Home and Reformatory, Cattal, for (ultimately) 250 inmates, at a cost of some £30,000 (1903-9); Scalebore Park (private) Asylum, Burley-in-Wharfedale, for 210 patients, in five blocks, which cover a site of nearly seven acres (1902-3), at a cost of £130,000; Menston Asylum, extension for 120 additional cases (1903-9); Yorkshire Sanatorium, £16,000, a recent work; Wakefield Asylum extension, for 130 more inmates; enlargement and improvements, with decoration, etc., Wakefield County Hall, at an outlay of £33,000 (1906-11); Court Houses at Rotherham, Knaresborough, and Castleford; West Riding Constabulary headquarters, Wakefield, to cost some £32,000 (191113), and police-stations at Dodworth, Darfield, Mexborough, Haworth, Harden, Grassington, Dalton, Adwick-le-Street, and Moorthorpe, near Doncaster (1904-13); Old Town Hall, Elland, improvements (1905); Bingley Training College for Teachers, on the Lady House estate, with "bath" and other blocks, and five residential hostels for the teachers (1909-10); secondary schools at Settle and Thorne; and Council, provided, and other schools in Addingham, Otley, Kippax, Shafton, Mexborough (mixed and infants'), Slaithwaite (Mechanics' Institute), Bingley (two), Heckmondwike, Kirkburton (mixed), Cudworth, Holmfirth, Horsforth, Grimthorpe, Maltby, Gomersal, Brinsworth (two), Wath (mixed, for 500), together with a great many more in and around the Wakefield, Leeds, Huddersfield, Skipton, Barnsley, Birstall, Denholme, Silkstone, Keighley, Rothwell, Bolton, Bradfield, Horton, Wheatley, Tinsley, Ilkley, Elsear, Castleford, and Rawmarsh districts. Mr. Vickers-Edwards acted as assessor in some competitions, including those for the Leeds Workhouse extension (1896), the Elland Secondary School for 200 girls, and—in Wakefield—the cattle market and enlargement of the Union Workhouse.

Mr. W. C. Ralph, F.R.I.B.A.

Mr. William Chasen Ralph, of King-street, Wigan, whose death we announced in our last issue (page 74 *ante*), was elected a Fellow of the Institute of Architects on January 19, 1903. He was the senior partner of the firm of Messrs. W. C. Ralph & Son, of Wigan, and was the architect of the Prudential Insurance Company's offices in Library-street (1905-6), and the Nurses' New Quarters, Wigan; and, in 1911, of the extension, for phthisis cases, of the Billinge Workhouse Infirmary for the Wigan Guardians. Messrs. Heaton, Ralph, & Heaton, of Wigan, were the architects of the Peoples' Palace and Opera House, Wigan; an extensive enlargement of the Ashton-in-Makerfield Infectious Diseases Hospital, in four new blocks, jointly with Messrs. Haywood & Harrison, of Accrington (1905-6); Handley District Council offices, in competition (1901); Ince-in-Makerfield municipal buildings, with Council chamber, surveyor's offices, etc. (1904-6); for the Abram Town Council: the public offices (1903-4) and the hospital in Park-lane; workhouse infirmary and other buildings and works, Billinge (1906); the pavilion and Wigan Bowling Club new lodge, Wigan-lane; and St. James's Church, Worsley, Infants' School (1901).

Mr. O. W. Davis.

We regret to record the death on the 16th inst. of Mr. Owen William Davis, architect, who was born on September 23, 1838. A native of Barnstaple, North Devon, he was educated at the Grammar School, and first served under Mr. Martin White, architect, of Bideford. His success at designing and carving decided him to come to London at the age of twenty-one. He entered the drawing office of Mr. James K. Colling, and was associated with him in his book, "Art Foliage." Subsequently he became manager for Sir M. Digby Wyatt, and under him designed many public buildings. His private work increasing, he started upon his own account. At this period he was much interested in furniture design, and considerably influenced in his style by such contemporaries as Eastlake Talbert and E. W. Godwin. His natural gift for colour led him to interior decoration, and as a designer of Pompeian work he excelled. He studied at South Kensington and Hatherley's, occasionally exhibited at the Academy, was the author of "Art and Work" and "Interior Decoration," contributed drawings and articles to the *Builder* and other journals, designed the decorations for the old Lyceum (Pompeian), the Gaiety (willow pattern plate), Empire (Persian carpet), the old Egyptian Hall, the Boardroom, Bank of England, and many mansions. He was one of the fathers of the modern wallpaper, and later in life probably designed more patterns for raised fabrics than any other artist of his time. He gave the first fillip to the now celebrated Barum ware, and designed the Old English furniture and woodwork for Victoria House at the Chicago Exhibition. He was also a good water-colour artist and an engraver on stone. In fact, it may be said of him that whatever the measure of his achievements, he gave himself unreservedly to Art. He was twice married, surviving both wives, had three sons and two daughters. He worked till within a few weeks of his death, which occurred from heart failure, and was happily attended with no pain.

LUMLEY WATERWORKS.

The Chester-le-Street Rural District Council have engaged Messrs. Taylor & Wallin as their engineers for the construction of a ferro-concrete reservoir in connection with the improvement of the water supply of Great and Little Lumley parishes.

TRADE CATALOGUES.

Mr. James Gibbons, of St. John's Works, Wolverhampton, who has recently opened a London showroom at 13 and 14, Fisher-street, Southampton-row, W.C., sends us his latest list of electric-light fittings. The prices quoted include wiring and holders, a practice sensibly adopted to avoid the necessity of the fittings being taken apart for the purpose of wiring after they are completed by men not acquainted with their construction. The designs shown are restrained and shapely, and not, as is too often the case with the stock design, emasculated echoes of fashions long since dead. The architect will find much that is useful in the supplementary list of locks, brassfoundry, door and window furniture, and art metal-work which Mr. Gibbons has also sent us. We note particularly Gibbons' check "shoe spring," C. 359. This spring is designed for any kind of door, where the ordinary floor spring is undesirable, the adjustable square pivot only taking up a floor space of 1 in. in depth, while the check cylinder is contained in the door itself. In the section devoted to ornamental ironwork a photograph is given of a handsome pair of wrought-iron lift fronts recently executed by the firm.

The British Ceresit Waterproofing Company, Ltd., 68, Victoria-street, London, S.W., forward us leaflets illustrating eight important works which have been treated with Ceresit, either mixed with concrete or employed in a cement mortar rendering. These include a reinforced concrete reservoir at Conisborough, a similar reservoir at East Cowes, Isle of Wight, both waterproofed with Ceresit mixed with the concrete; and swimming-bath at Cheadle Hulme, Manchester, waterproofed with 1-in. Ceresit rendering. The latter treatment has been adopted for the basements of the Liver building, Liverpool, and the Royal Society of Medicine, Cavendish-square, London, W.; for the dome of the General Post Office, Bombay; for weatherside walls at the Isolation Hospital, Whitehall-road, near Gravesend; and for a motor-pit at a woollen mill at Bradford.

Messrs. George Jennings, Ltd., of 63 and 67, Lambeth Palace-road, Westminster Bridge, S.E., send us an illustrated booklet, drawing our attention to the new showrooms which they have recently opened at 46, Dover-street, Piccadilly, W., to display to the best advantage and in the most convenient locality a selection of sanitary appliances suitable for all classes of work. Complete bathrooms are on view to enable customers to see how the most up-to-date bath fittings can be arranged when getting out plans for new buildings or altering existing apparatus. The business was established as far back as 1838 by the late Mr. George Jennings, one of the pioneers of modern sanitary engineering, and it is not too much to say that the present firm ably maintain the standard which has always been associated with the name of Jennings.

Messrs. Mather & Platt, of Park Works, Manchester, send us an interesting series of illustrations, with an article descriptive of their works. The firm's activities are manifold, but our readers will be more particularly interested in their improved fire-extinguishing apparatus. Messrs. Mather & Platt are the makers of the Grinnell automatic sprinkler, which has won for itself so wide a reputation, and include in their business the manufacture of cast-iron fittings, pumps, valves, tanks, and other fire appliances.

We have received a leaflet from Messrs. John Hamer & Co., of 63, Queen Victoria-street, London, E.C., giving particulars of their patent hand safety lifts for passengers, goods, parcels, and dinners. The special features include quick parcels lift, self-sustaining balance lift, self-sustaining winding lift, while each lift has a combination brake and self-sustaining mechanism, and polished steel runners, ensuring absolute silence when running. Messrs. Hamer also manufacture electric lifts and hoists.

Ozonair, Ltd., of 96, Victoria-street, Westminster, S.W., send us an illustrated booklet dealing with the Ozonair system of pure air ventilation. The healthful properties of ozone are common knowledge; the Ozonair system, as its name implies, is designed to fulfil the requirements of theoretically correct ventilation in combination with artificially produced ozone. This object is attained by drawing the air supply from as pure a service as possible and removing the solid floating matter by a special filtering screen, which may be arranged to cool the air up to a difference of about ten degrees between the internal and external temperature, the quantity of water used for washing amounting to only a few gallons per hour for a comparatively large installation. The cleaned air is then passed into a mixing chamber, where it is purified and partially sterilised by the addition of a minute quantity

TRADE CATALOGUES.—*Continued on page 104.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointment, xvi.; Auction Sales, xxii. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.**

Competitions.

AUGUST 25.—**Tendring.**—COTTAGE HOMES.—The Guardians of Tendring Union invite designs, etc., for erection of a pair of cottage homes. Mr. A. J. Ward, Clerk to the Guardians, Harwich. See page 65 in issue of July 18 for further particulars.

SEPTEMBER 1.—**High Wycombe.**—TOWN PLANNING.—The Borough Council of High Wycombe invite schemes for the town planning of the borough. Premiums of £25, £10, and £5 respectively. Particulars from Mr. T. J. Rushbrooke, Borough Surveyor, High Wycombe.

OCTOBER 31.—**York.**—HOUSING AND TOWN PLANNING.—The Town Committee of the York Corporation invite architects and surveyors to submit for competition a scheme under the Housing and Town Planning Act, 1909, in connection with certain areas within and without the City of York. Premiums of £100, £50, and £25 respectively will be awarded. See advertisement in issue for July 18.

NOVEMBER 1.—**Sona.**—DESIGNS FOR A ROYAL PALACE AND LAW COURTS.—**Particulars from the Commercial Intelligence Branch of the Board of Trade,** Basinghall-street, E.C. See page 708 in this issue and page 173, August 9, and page 350, September 27, 1912

NO DATE.—**Blackburn.**—NEW FIRE-STATION.—The Blackburn Corporation are to invite designs for a proposed new fire-station and firemen's dwellings. Competition limited to architects having an office within the borough. Premiums, £100, £50, and £25. Assessor is Mr F. G. Briggs, F.R.I.B.A. Apply Town Clerk, Town Hall, Blackburn.

* NO DATE.—**Bradford.**—LAYING-OUT OF AN ESTATE, ETC.—The Council of the City of Bradford invite designs for the laying-out of an estate, and for the erection of workmen's dwellings. See advertisement in this issue for further particulars.

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

JULY 28.—**Aylesbury.**—Erection of an additional room at the Isolation Hospital, Stoke-road; and the construction of ladies' lavatories at the Town Hall, Aylesbury, for Aylesbury U.D.C. Specifications, etc., of Mr. W. H. Taylor, Engineer and Surveyor, Town Hall, Aylesbury. Deposit, 10s. 6d.

* JULY 28.—**Barnet.**—PAVILION AND PORTER'S LODGE.—The Barnet Isolation Hospital Committee invite tenders for the erection and completion of a scarlet fever pavilion and porter's lodge. See advertisement in this issue for further particulars.

JULY 28.—**Gillingham.**—Extending the engine-room, &c., at the electric generating-station, Gillingham-road, for the Town Council. Plans, etc., of Mr. J. L. Redfern, Borough Surveyor, Council Offices, Gardiner-street, Gillingham. Deposit, 10s. 6d.

JULY 28.—**Llanishen.**—Erection of two detached cottages, and adaptation and repairs to farm buildings at Mill Farm; repairs and adaptation to house and buildings at Llwyn-Crwn-Ganel; Erection of one pair of cottages and one single cottage, Coals, E.C., and repairs and adaptation of farm buildings at Llanishen Fawr Farm, for Glamorgan C.C. Specifications, etc., of Mr. T. Mansel Franklen, Clerk of the Glamorgan C.C., Glamorgan County Hall, Cardiff.

JULY 28.—**Oldham.**—The Education Committee of the Corporation invite tenders for the separate works required in the erection of a domestic centre, Ward-street. Plans, etc., from the architects, Messrs. C. T. Taylor & Roberts, 10, Clegg-street, Oldham.

JULY 28.—**Sheffield.**—Erection of new infants' department and special centre at Morley-street Council School, Walkley, for City of Sheffield Education Committee. Particulars on application to the City Architect, Town Hall, Sheffield.

JULY 28.—**Sherborne.**—Extensions and alterations to the Sherborne Sanitary Steam Laundry Company's premises. Specifications, etc., at the Secretaries' Offices, Greenhill, Sherborne.

JULY 29.—**Cwm (Mon.).**—Erection of seventy-nine houses at Cwm. Plans and specifications at the architects' offices, Neath, or with Mr. S. J Murrian, Kendle-terrace, Cwm. Messrs. S. Cym Jones & Arnold, architects and surveyors, Great Western-chambers, Neath.

JULY 29.—**Lintnwaite.**—Erection of two semi-detached houses in Manchester-road, Linthwaite. Plans, etc., of Messrs. Joseph Berry & Sons, architects and surveyors, 3, Market-place, Huddersfield.

JULY 29.—**Westhoughton.**—Construction of all the works necessary in erecting a brick water-tower, to carry a steel water-service tank at Snydale-hill, Westhoughton, for the Westhoughton U.D.C. Specifications, etc., of Mr. George Hayes, Surveyor to the Council, Town Hall, Westhoughton. Deposit, 10s.

JULY 30.—**Bristol.**—Erection of a picture house at St. George, Bristol. Particulars of Mr. Henry M. Bennett, architect, 36, Corn-street, Bristol.

JULY 30.—**Holywell.**—Erection of a new drill-hall on the Halkyn-road, Holywell, for Flintshire Territorial Force Association. Plans, etc., at the architects' office, Messrs. John H. Davies & Sons, 14, Newgate-street, Chester. Deposit, £1 1s.

JULY 30.—**Penrhyndeudraeth.**—New minister's house in connection with Gorphwysfa C.M. Chapel, Penrhyndeudraeth. Specifications, etc., can be inspected at Gwalia House, Penrhyndeudraeth, and at the office of Messrs. O. Morris Roberts & Son, M.S.A., architects, etc. Portmadoc.

JULY 30.—**Rochdale.**—The Health Committee of the Borough of Rochdale invite tenders for the alteration of property at the junction of Elliott and Yorkshire streets, for the purpose of of tuberculin dispensary. Particulars from Mr. P. W. Hathaway A.R.I.B.A., Town Hall.

JULY 30.—**Weymouth.**—Erection of thirty-seven cottages and eight blocks of tenements for Weymouth Corporation. Full particulars (no quantities) obtainable from Mr. Kenneth J. S. Harris, Borough Surveyor, Municipal Offices, Weymouth.

JULY 31.—**Argoed.**—Erection of a new residence at Argoed, near Blackwood (Mon.), for Dr. John Griffith. Specifications, etc., of Mr. A. F. Webb, M.S.A., architect and surveyor, Blackwood. Deposit £1 1s.

JULY 31.—**Offham.**—Repairs to Offham School, for Kent Education Committee. Specifications, prepared by the Committee's Architect, Mr. Wilfrid H. Robinson, of Caxton House, Westminster, can be seen and further information obtained from the Correspondent, Mr. P. C. Golesworthy, West Malling, Kent.

JULY 31.—**Salisbury.**—Putting a concrete apron round the outside walls, and for other work to the consecrated chapel at the London-road Cemetery, for the Salisbury Burial Board. Specification etc., at the offices of the architects, Messrs. John Harding & Son, 58, High-street, Salisbury.

AUGUST 1.—**Ashbourne.**—Rebuilding of Knivetonwood culvert, near Ashbourne, for Derby C.C. Applications for plans, specifications, etc., to Mr. J. W. Horton, Assoc.M.Inst.C.E., County Surveyor, County Offices, Derby. Deposit, £2 2s.

AUGUST 2.—**Barnsley.**—The West Riding Highways Committee invite tenders for the undermentioned works at Marles North Bridge, carrying a district road over the River Dearne, in the urban district of Wombwell and rural district of Barnsley, viz.:—(1) Masonry and general works; (2) reinforced concrete construction. Specification etc., of Mr. F. G. Carpenter, West Riding Surveyor, County Hall, Wakefield. Deposit, £1.

AUGUST 2.—**Broadstone.**—Alterations and repairs to Broadstone Council School, for Dorset Education Committee. Specification, etc., may be seen at the County Offices, Dorchester, and at the school.

AUGUST 2.—**Cross Keys (Mon.).**—Erection of a new cinema at Cross Keys, Mon. Plans and specification of Mr. John W. Aldiss, M.S.A., architect and surveyor, Newbridge, Mon.

* AUGUST 4.—**Cardiff.**—MUSEUM.—The Council of the National Museum of Wales invite builders wishing to tender for the completion of the museum to send in their names before the abovementioned date. See advertisement in this issue for further particulars.

AUGUST 5.—**Bray (Ireland).**—New shed, office, and store at electricity works, for Bray U.D.C. Plans and specification, prepared by the Engineer, Mr. P. H. McCarthy, B.E., 39, Westmoreland-street, Dublin, can be inspected at the Town Hall.

* AUGUST 5.—**Dartford.**—IMPROVEMENTS TO OFFICES.—The Kent E.C. invite tenders for improvements to offices at St. Alban's-road Council School.

* AUGUST 5.—**North Preston.**—REPAIRS.—The Kent Education Committee invite tenders for execution of summer repairs at the North Preston School. See advertisement in this issue for further particulars.

AUGUST 6.—**Bollington.**—Building of a wall for diverting the course of the stream through the recreation ground, for the Bollington U.D.C. Specifications etc., from Mr. Samuel Knight, Clerk, Council Offices, Bollington.

AUGUST 6.—**Dunfermline.**—The Public Library Committee invite tenders for the following works in connection with the extension of the Central Library:—(1) Excavator, mason, and brick works; (2) Carpenter and joiner works; (3) slater work; (4) plumber work: (5) plaster and cement works; (6) glazier work; (7) steelwork; (8) asphalt work; and (9) tile and marble works. The plans may be seen either at the office of the architect, Mr. James Shearer, 1, Bonnar-street, Dunfermline, or at the office of the measurers, Messrs. Douglas & Wright, I.M., 6, High-street, Dunfermline. Deposit, £1 1s. for each schedule.

* AUGUST 6.—**Liverpool.**—LABOUR EXCHANGE.—The Commissioners of H.M. Works and Public Buildings invite tenders for erection of Coastwise Labour Exchange, Liverpool Docks.

* AUGUST 6.—**Tonbridge.**—REPAIRS TO INSTITUTE.—The Kent E.C. invite tenders for repairs at Technical Institute.

AUGUST 8.—**Glasgow.**—Erection of shops and business premises in connection with the reconstruction of High-street area, viz.:—(1) Digger, mason, and brick works; (2) wright, etc., works; (3) cast-iron and steel works; (4) asphalt work; (5) plumber and gasfitter works; (6) plaster work; (7) Glazier work; (8) tilework; and (9) painter work, for Glasgow Corporation. Specifications, etc., at the Office of the Public Works, 64, Cochrane-street, Glasgow.

* AUGUST 12.—**London.**—EXCAVATION.—The Commissioners of H.M. Works, etc., invite tenders for excavation of the site for the new G.P.O., East, E.C. See advertisement in this issue for further particulars.

AUGUST 16.—**Sale.**—Higher elementary school at Sale, in accordance with the plans and specifications prepared by Mr. James Percival, of 14, St. Ann's-square, Manchester. Specifications, etc., at the office of the architect. Deposit, £1 1s.

AUGUST 16.—**Waltham Abbey.**—Alterations and additions to the Waltham Abbey Council Schools, for the Essex Education Committee. Plans, etc., of the County Architect, 73, Duke-street, Chelmsford.

AUGUST 18.—**East Suffolk.**—The East Suffolk County Education Committee invite tenders for the erection of the following buildings:—Chediston, near Halesworth, new school for about eighty-eight; Holbrook, new special subjects centre; Buxhall, mistress's cottage; Martlesham, enlargement of school. Specification, etc., of Mr. J. Webb, Surveyor, County Hall, Ipswich. Deposit £1 1s. for each job.

AUGUST 23.—**Harlow.**—Extension to the existing fire-engine house, for Harlow P.C. Specifications, etc., may be seen at Mr. S Deards, Clerk to the Harlow P.C., Westhouse, Harlow.

* AUGUST 27.—**Chelmsford.**—WORKING CLASS DWELLINGS.—The Chelmsford T.C. invite tenders for 106 additional working class dwellings.

NO DATE.—**Cardiff.**—Taking down old buildings and erecting new offices in High-street, Cardiff. Messrs. Thomas & Harding, Lics.R.I.B.A., architects, Queen's-chambers, Cardiff.

NO DATE.—**Cartmel.**—Alterations and additions to Cartmel Grammar School. Plans, etc., of Messrs. Settle & Brundrit, A.R.I.B.A., County-square, Ulverston.

NO DATE.—**Castleford.**—Shop and office fitter's work in connection with new central premises, situate in Carlton-street, Castleford, for the Castleford Co-operative Industrial Society, Ltd. Particulars of Mr. J Philip Padgett, architect, Carlton-chambers, Castleford. Deposit, £1 1s.

NO DATE.—**Ilkley.**—Residence at Ilkley. Messrs. Watson, Son, & Ellison, architects and surveyors, Barstow-square and King-street, Wakefield.

NO DATE.—**Norfolk.**—New classroom and sundry other alterations and additions to Pulham St. Mary the Virgin Pennoyers Schools, Norfolk. Particulars of Messrs. Lacey & Upcher, architects and surveyors, 6, Upper King-street, Norwich.

NO DATE.—**Pontefract.**—The Pontefract Industrial Co-operative Society, Ltd., invite tenders for the erection and completion of shops, arcade, offices, and showrooms in Salter-row, Pontefract. Particulars of Messrs. Garside & Pennington, architects and surveyors, Pontefract and Castleford.

[Those with an asterisk (*) are advertised in this issue.]

ENGINEERING, IRON, AND STEEL.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

JULY 29.—**Fowey.**—Construction of a jetty in Fowey Harbour (to be let in two contracts), for Great Western Railway. Plans and specification at the office of the engineer at this station.

JULY 29.—**Kidderminster.**—Reconstruction of Comberton-road Bridge, Kidderminster, for Great Western Railway. Plans and specification at the office of the engineer at Wolverhampton Station.

JULY 31.—**Fleetwood.**—Supply of a quantity of 10-in. cast-iron pipes, for the Fleetwood U.D.C., full particulars of which may be obtained from Mr. W. H. Miller, Electrical Engineer, Copse-road, Fleetwood.

AUGUST 1.—**Cape Wrath.**—The Commissioners of Northern Lighthouses invite tenders for the carrying-out of the works necessary to transfer the existing light and fog signal on Cape Wrath to the extremity of the reef, which lies off the head, and to form an access thereto. Plans of the works at the office of the Engineer to the Commissioners, 84, George-street, Edinburgh, of whom specifications can be obtained. Deposit, £1 1s.

AUGUST 1.—**Greenock.**—Excavation and concrete work for gas-holder tank, for Greenock Corporation. Specifications, etc., of Mr. James Macleod, Engineer and Manager, Gasworks, Greenock.

AUGUST 1.—**Silloth.**—The U.D.C. of Holme Cultram invite tenders for repairing the wall and apron, constructing a toe wall, and erecting timber groynes at Silloth. Specification, etc., and bill of quantities may be seen at the office of the Engineer, Mr. J. Campbell Boyd, Assoc.M.Inst.C.E., 18, Bank-street, Carlisle. Deposit, £1.

AUGUST 4.—**Llanelly.**—Manufacture and delivery of about 2,950 tons of 16-in. and 14-in., about 2,700 tons of 10-in., 9-in., and 8-in., and about 1,550 tons of 5-in. and 4-in. cast-iron pipes and special castings, for Llanelly R.D.C. Specification, etc., at the offices of Messrs. H. Rofe & Son, 8, Victoria-street, Westminster. Deposit, £5 5s.

AUGUST 5.—**Dubmill.**—The Cumberland C.C. invite tenders for the construction of about 520 yds. of concrete sea wall and apron, together with timber piling, etc., adjoining the main road from Maryport to Silloth at Dubmill, about 5½ miles from Silloth, and 4 miles from Bullgill Station. Specifications, etc., of Mr. William Finch, County Surveyor and Bridge Master, The Courts, Carlisle. Deposit, £1 1s.

* AUGUST 5.—**Tottenham.**—STEELWORK.—The Tottenham U.D.C. invite tenders for supply and delivery of steelwork for proposed cart shed at Central Depôt.

FURNITURE, PAINTING, MATERIALS, etc.

JULY 28.—**Penybryn.**—Painting the outside woodwork, etc., of forty houses for the Penalltau Building Club, at Penybryn, Gelligaer. Particulars of Mr. J. Edwards, Penallta Colliery Offices, Hengoed.

JULY 29.—**Blackpool.**—Painting and decorating the offices of the Fylde Water Board at Sefton-street, Blackpool. Specification, etc., at the Engineer's Office, Sefton-street, Blackpool.

JULY 29.—**Blackpool.**—The Fylde Water Board invite tenders for new furniture and fittings in the Engineer's Department. Specification, etc., at Engineer's Office. Mr. C. Arthur, Clerk, Sefton-street, Blackpool.

JULY 29.—**Woodford.**—Supply of broken granite (Guernsey, Alderney, or Quenast) until August 31, 1914, for Woodford U.D.C. Particulars, etc., of Mr. William Farrington, Surveyor to the Council, Council Offices, Woodford Green, Essex.

JULY 30.—**Whiston.**—Painting of male mental hospital, Workhouse, Whiston; repairs to windows and external painting of the nurses' home, Whiston; external painting of four cottages in Warrington-road, Whiston, for Prescot Guardians. Specifications, etc., of Mr. William Ellis, architect, 9, Hardshaw-street, St. Helens. Deposit of 10s.

JULY 30.—**Treorchy and Ferndale.**—Repairing, papering, painting, etc., to be done at Pencelli Hotel, Treorchy, and Maxwell Hotel, Ferndale, for Messrs. D. John & Co., Ltd., Pentre. Specifications of Mr. W. D. Morgan, M.S.A., architect, 194, Ystrad-road, Pentre, Rhondda.

* AUGUST 1.—**Erith.**—REPAIRS, ETC.—The Kent E.C. invite tenders for repairs and redecorations at Technical Institute.

AUGUST 2.—**Great Baddow.**—Painting Girls' Home, Great Baddow, for Chelmsford Board of Guardians. A specification may be seen at the home.

AUGUST 2.—**Keighley.**—The Education Committee invite tenders for the supply and delivery of cupboards &c., to certain schools. Specifications, etc. of Mr. H. Midgley, Secretary, Education Offices, Keighley.

* AUGUST 6.—**Not Stated.**—WATER-CLOSET SEATS.—The Commissioners of H.M. Works, etc., invite tenders for the supply of water-closet seats for a period of three years. See advertisement in this issue for further particulars.

AUGUST 6.—**Sunbury-on-Thames.**—Supply and free delivery at Sunbury Railway Station, or at a riverside wharf, of not less than 150 tons of granite, broken to pass through a 1½-in. ring, also 400 tons of tar-macadam, and 500 cubic yds. of Kentish brown pit flints. Further particulars of Mr. Harold F. Coales, Assoc. M.Inst.C.E., the Surveyor to the Council.

* AUGUST 13.—**Deptford, S.E.**—LIBRARY FITTINGS.—The Deptford B.C. invite tenders for supply of fittings and furniture for Central Library, Lewisham High-road, S.E.

ROADS, SANITARY AND WATER WORKS.

JULY 25.—**Merton.**—Making-up Brisbane-avenue and Milner-road (west end), in the parish of Merton, for U.D.C. Specifications on application to Mr. G. Jerram, Surveyor, Council Offices, Merton. Deposit, £2.

JULY 26.—**Bedwellty.**—Construction of about 450 yds. of new road at Pengam, from St. David's Church to Fairview, for Bedwellty U.D.C. Specifications, etc., of Mr. Dan. H. Price, Surveyor to the Council, Aberbargoed. Deposit, £2 2s.

JULY 26.—**Bolsover.**—Making-up of Scarsdale-street, Carr Vale, for the Bolsover U.D.C. Specifications, etc., of Mr. W. G. H. Browne, Engineer and Surveyor, Council Offices, Bolsover.

JULY 29.—**Barking.**—Creosoted deal paving on concrete foundation in portions of East-street and Longbridge-road, Fanshawe-avenue, Ilford-lane, and Ripple-road, for Barking U.D.C. Plans, etc., of Mr. C. S. Dawson, Surveyor to the Council, Public Offices, Barking.

JULY 29.—**Birmingham.**—Construction of new intercepting sewers (one 10 ft. by 7 ft. and one 7 ft. diameter, etc., for the Birmingham, Tame, and Rea District Drainage Board. Particulars of Mr. John D. Watson, M.Inst.C.E., Engineer to the Board, Engineer's Office, Tyburn, Birmingham.

JULY 29.—**Bournemouth.**—Construction of Seafield-road extension, with sewer, surface-water drain, etc., for the County Borough of Bournemouth. Particulars of the Borough Engineer, Mr. F. W. Lacey, Municipal Offices, Bournemouth. Deposit, £1 1s.

JULY 29.—**Pontefract.**—Private street work in Back Banks-avenue, Pontefract. Plans, etc., of Mr. John E. Pickard, Borough Surveyor, Municipal Offices, Pontefract.

JULY 30.—**Chelmsford.**—Laying of water mains for Town Council. Specification, etc., at the Borough Engineer's Office.

* JULY 30.—**Hammersmith.**—REPAVING.—The Hammersmith B.C. invite tenders for repaving the carriageway of certain roads with creosoted deal blocks. See advertisement in this issue for further particulars.

JULY 30.—**Wanstead.**—Making-up the streets known as Felstead-road, Malford-grove for the Wanstead U.D.C. Specification, etc., at the Council's Offices, Wanstead, N.E. (Surveyor's Department).

JULY 30.—**Widnes.**—Making of Fairfield-road, from Appleton-road to Greenway-road, for Widnes Corporation. Specification, etc., of Mr. John S. Sinclair, A.M.Inst.C.E., Borough Surveyor, Town Hall, Widnes. Deposit of £1 1s.

AUGUST 1.—**Invercannie.**—The T.C. of Aberdeen invite tenders for the following works at Invercannie, viz.:—The reconstruction of two existing filter beds, the construction of three new filter beds (sand area about 2 acres), the provision and laying of cast-iron pipes from 40-in. diameter downwards, the construction of a reinforced concrete baffle wall, and other contingent works. Specifications, etc., at the Water Engineer's Office, 41½, Union-street, Aberdeen. Deposit, £5.

AUGUST 2.—**Blaydon.**—Paving, etc., of Edward-street, Back George and Edward-street, Shildon-street, Top Cross-street, and Hawdon-place, Blaydon, for Blaydon U.D.C. Plans, etc., of the Surveyor, Mr. George Symon. Deposit, £1 1s.

AUGUST 2.—**Rochdale.**—Repair of Workhouse Infirmary road, and paving behind the nurses' home, according to drawing and quantities, to be seen at the Workhouse. Mr. R. A. Leach, Union Clerk, Union Offices, Townhead, Rochdale.

AUGUST 4.—**Ashington.**—Paving, etc., of certain streets, for the U.D.C. Plans, etc., of the Surveyor, Council Chambers, Ashington.

AUGUST 5.—**Scariff.**—The Guardians of the Poor of the Scariff Union invite tenders for the construction of all necessary works in connection with a sewage scheme for the Scariff Union Workhouse. Particulars of Mr. John Holohan, Clerk to the Guardians, Workhouse, Scariff, Co. Clare.

AUGUST 5.—**Uffington.**—Supplying and laying about 260 yds. of 1½-in. service pipe, and about 400 yds. of 1-in service pipe, and other works in connection with the extension of the water supply in the village of Uffington for the Faringdon R.D.C. Specifications, etc., of Mr. H. Glynn Warne, Engineer, Faringdon, Berks.

AUGUST 5.—**Withyham.**—The East Grinstead R.D.C. invite tenders for the construction of storm-water sewers on the Warren and Goldsmiths' Estates, in the parish of Withyham. Specifications, etc., at the office of the Engineer and Surveyor to the Council, Mr. Charles Turton, 6, High-street, East Grinstead. Deposit, £3 3s.

AUGUST 7.—**Haltwhistle.**—The Haltwhistle R.D.C. invite tenders for the laying of about 4½ miles of 6-in. and 5-in. cast-iron main, from Coanwood to Haltwhistle, with service reservoir, hydrants, and other fittings, in accordance with plans and particulars prepared by their Engineer, Mr. J. E. Parker, A.M.Inst.C.E., Post Office-chambers, Newcastle-on-Tyne. Plans, etc., on application to the Engineer. Deposit, £2 2s.

AUGUST 9.—**Framlingham.**—The Plomesgate R.D.C. invite tenders for the construction of a brick and concrete underground sewage storm-water tank, with pipe and other connections to the existing sewage-disposal works at Framlingham, Suffolk. Specifications, etc., at the Board-room, Wickham Market.

AUGUST 9.—**Loughrea.**—The Council of the Loughrea Rural District invite tenders for carrying out sewerage works, according to the plans and specification prepared by Mr. T. W. Roseingrave, B.E., 33, Catherine-street, Limerick, and their consulting engineer, Mr. F. Bergin, B.E., 36, Westmoreland-street, Dublin. Specification of Mr. L. Conway, Clerk of the Council, Loughrea. Deposit, £1.

AUGUST 11.—**Rogerstone.**—Construction of about 300 lin. yds. of 9-in. diameter stoneware pipe sewers near St. John's Church, Rogerstone, in accordance with the drawings prepared by the Council's Engineer, Mr. Gomer S. Morgan, Pontypridd, for the St. Mellon's R.D.C. Specification, etc., of Mr. A. H. Rees, Clerk, Union Offices, Queen's-hill, Newport, Mon. Deposit, £1.

AUGUST 27.—**Tottenham.**—Providing and fixing thirty-two cast-iron porcelain enamelled baths at the North-Eastern Fever Hospital, St. Ann's-road, Tottenham, N., for the Metropolitan Asylums Board, in accordance with specification prepared by Mr. W. T. Hatch, M.Inst.C.E., M.Inst.Mech.E., Engineer-in-Chief. Specifications, etc., from Mr. T. Duncombe Mann, Clerk to the Board. Deposit, £1.

NO DATE.—**Bingley.**—Sundry street works on the Myrtle Park Estate, Bingley, for Messrs. Nunns & Bracewell, architects and surveyors, Bank-chambers, Bingley.

NO DATE.—**Shrewsbury.**—Laying of about 500 yds. lineal of 9-in., 6-in., and 4-in. sewers at the Garden Suburb, Ditherington. Specification, etc., of Mr. Arthur E. Williams, architect and surveyor, County-chambers, 12, High-street, Shrewsbury. Deposit, £2 2s.

Public Appointment.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*ARCHITECTURAL ASSISTANT	Yorkshire Education Com.	£110 per annum	Aug. 8

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*DEALS, BATTENS, BOARDS, TIMBER, ETC.—Great Hall, Winchester House, E.C.	Churchill & Sim	July 30
*BUILDER'S PLANT AND MATERIAL, BELVEDERE-ROAD, LAMBETH—On the Prems.	Fuller, Horsey, Sons, & Cassell	Aug. 12
*WOODWKG. MCHRY., CONSTRUC. ENGRG. PLT., ETC., WOOLWICH—On the Prems.	Fuller, Horsey, Sons, & Cassell	Aug. 19
*OLD CHEYNE HOUSE, CHELSEA, AND BUILDING SITES—At the Mart	Tyler & Co.	No date

[Those with an asterisk (*) are advertised in this issue.]

TRADE CATALOGUES—*continued from page 101.*

of pure ozone. It is to be noted that the firm undertake to convert any existing system of ventilation at a comparatively small cost.

We have received from Messrs. Young & Marten, Ltd., a booklet with price list of their well-known "Hue" barless fires. Photographs are reproduced, showing the ease with which the "Hue" fire may be fitted to old-fashioned register grates, by the removal of the old bottom and bars. The stock patterns illustrated are pleasing in appearance.

PATENTS.

APPLICATIONS PUBLISHED.*

12,433 of 1912.—Norman Pirceval Roe: Weighing-machine for materials for concrete.

14,733 of 1912.—Thomas Torrance, John Rowland Torrance, Hugh Nash Torrance, and Torrance & Sons, Ltd.: Paint mills or the like.

14,940 of 1912.—Ludwig Schomburg: Socket and spigot joints for pipes.

15,247 of 1912.—Richard England: Treatment of sewage.

16,088 of 1912.—The Hewitt Construction Syndicate, Ltd., and William Walter Hewitt: Roofs.

16,127 of 1912.—Paul Rolofs: Fireproof roof.

17,168 of 1912.—Salomon Ostrowsky: Public works portable illuminator.

18,190 of 1912.—Max Schubert and Karl Smolka: Wheeled paving-rams.

18,617 of 1912.—Joseph Hall: Gas-heated radiators.

20,510 of 1912.—Otto Heidrich: Brick-making machines.

24,257 of 1912.—Frederick John Morgan: Flushing tanks or cisterns.

24,469 of 1912.—James Herbert Bennett: Blocks for building or other purposes.

25,311 of 1912.—Joseph Hooper: Sash windows.

29,844 of 1912.—William James Ayles: Houses, buildings, and the like with hollow walls, and the construction thereof.

10 of 1913.—Thomas Gaddes: Stays for casement windows and other hinged articles.

946 of 1913.—William Thomas Bell and Francis Samuel Highton: Frames or mountings for stone breakers, ore cutters, or other like machines.

1,053 of 1913.—George Lafayette Hibbard: Moulds for moulding cement walls and like structures *in situ*.

1,324 of 1913.—Otto Kreter and George Edward Kreter: Operating devices for flushing devices.

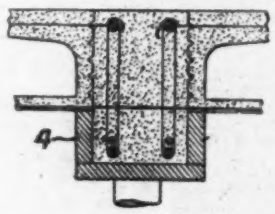
6,445 of 1913.—Josef Alois Lucardi: Manufacture of artificial stone.

7,093 of 1913.—Edward Kersey: Flushing apparatus.

SELECTED PATENTS.

2,762 of 1912.—William John Swain: Joist floors.

This relates to building blocks as described in Specification No. 11,444/1911, which are formed without the flanges and with extensions

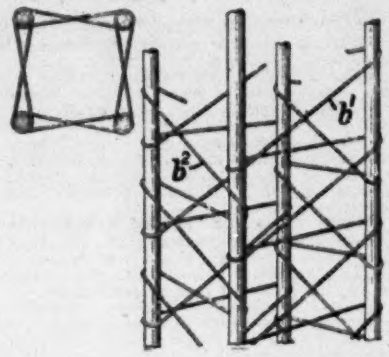


2,762 of 1912.

at the base, so that the reinforcements of the concrete joists cast between the blocks can be placed nearer the bottom faces of the joists. The joists are deeper than the blocks, packing-pieces 4 being provided. The blocks are reinforced, and may be solid or hollow.

3,027 of 1912.—James Hardress de Warrenne and Peter Chalmers Cowan: Reinforced concrete.

This relates to concrete constructions, wherein the main bars are bounded in pairs by continuous zigzag bracing b^1, b^2, the loops on any main bar being formed alternately on the adjacent bracings. Pairs of bars diagonally opposite may be similarly connected, and the bracing may be crossed. The bracings are formed with close coils on a mandrel, which is then removed, and the bracings are placed together with an edge on one intermeshing with an edge on another, and the main or temporary bars are threaded through them, the temporary bars being withdrawn as the



3,027 of 1912.

combined bracings are slipped on the main bars. The coils are stretched apart to the desired pitch before or after the bars are assembled, and the complete skeleton is finally placed in a mould.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the prepaid rate of 19s. per annum, with delivery *by Friday Morning's Post* in London and its suburbs.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.
Per 1000 Alongside, in River.	
Best Stocks	1 16 0
Picked Stocks for Facings	2 10 0
Per 1000, Delivered at Railway Depôt.	
Flettons	1 14 0
Best Fareham Red	3 12 0
Best Red Pressed Ruabon Facing	5 0 0
GLAZED BRICKS—	
Best White, Ivory, and Salt Glzd Str'tch'rs	12 7 6
Headers	11 17 6
Quoins, Bullnose and 4½ in. Flats	15 17 6
D'ble Str'tch'rs	17 17 6
Best Blue Pressed Staffordshire	3 15 0
Do. Bullnose	4 0 0
Best Stourbridge Fire Bricks	4 0 0
Double Headers	14 17 6
One Side and two Ends	18 17 6
Two Sides and one End	19 17 6
Splays and Squints	17 7 6

Second Quality £1 10s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	7 0	per yard, delivered.
Thames Ballast	5 9	" "
Best Portland Cement	36 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 14s. 0d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.	s. d.
BATH STONE—Delivered on road waggons, Paddington Depôt	1 7½
Do. do. Delivered on road waggons, Nine Elms Depôt	1 9½
PORTLAND STONE (20 ft. average)—	
Brown Whitbed, Delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½
White Basebed, Delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 6½

Per Ft. Cube, Delivered at Railway Depôt.	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Scappled random blocks	2 10
Per Ft. Super., Delivered at Railway Depôt.	
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7
1½ in. to 2 in. ditto, ditto	0 6

STONE (*Continued*).

HARD YORK— Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Scappled random blocks	3 0
Per Ft. Super., Delivered at Railway Depôt.	
6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
20 x 10 best blue Bangor	13 2 6	20 x 10 best Eureka unfading green	15 17 6
20 x 12 ditto	13 17 6	20 x 12 ditto	18 7 6
20 x 10 1st q'lity ditto	13 0 0	18 x 10 ditto	13 5 0
20 x 12 ditto	13 15 0	16 x 8 ditto	10 5 0
16 x 8 ditto	7 5 0	20 x 10 permanent green	11 12 6
22 x 10 best blue Portmadoc	12 12 6	18 x 10 ditto	9 12 6
16 x 8 ditto	6 12 6	16 x 8 ditto	6 12 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Best "Hartshill" brand, plain sand-faced (per 1000)	45 0
Hip and Valley (per doz.)	3 7	Do. pressed (per 1000)	42 6
Best Broseley (per 1000)	50 0	Do. Ornamental (per 1000)	47 6
Do. Ornamental (per 1000)	52 6	Hip (per doz.)	4 0
Hip and Valley (per doz.)	4 0	Valley (per doz)	3 6
Best Ruabon red, brown, or brindle (Edw'ds)(pr1000)	57 6	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. Ornamental (per 1000)	60 0	Hand-made sand-faced (per 1000)	45 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (per doz)	3 0	Valley (per doz)	3 6

WOOD.

BUILDING WOOD.	At per standard. £ s. d.		£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15 0 0	..	16 10 0
Deals: best 3 in. by 9 in.	15 0 0	..	16 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	12 10 0	..	13 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0		less than 7 in. and 8 in. less than best
Deals, seconds	1 0 0		
Battens: seconds	0 10 0		"
2 in. by 4 in. and 2 in. by 6 in.	11 10 0	..	12 10 0
2 in. by 4½ in. and 2 in. by 5 in.	10 10 0	..	11 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0		more than battens.
" ¾ in.	1 0 0		"
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 5 0 0	..	6 5 0
Seconds	4 10 0	..	5 0 0
Small timber (8 in. to 10 in.)	3 17 6	..	4 0 0
Small timber (6 in. to 8 in.)	3 5 0	..	3 10 0
Swedish balks	2 12 6	..	3 0 0
Pitch-pine timber (30 ft. average)	6 0 0	..	7 0 0

JOINERS' WOOD.	At per standard. £ s. d.		£ s. d.
White Sea: first yellow deals, 3 in. by 11 in.	26 0 0	..	27 0 0
3 in. by 9 in.	24 0 0	..	25 0 0
Battens, 2½ in. and 3 in. by 7 in.	18 10 0	..	19 10 0
Second yellow deals, 3 in. by 11 in.	21 10 0	..	22 10 0
" " 3 in. by 9 in.	20 0 0	..	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	15 0 0	..	16 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	16 0 0	..	17 0 0
Battens, 2½ in. and 3 in. by 7 in.	14 0 0	..	15 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	23 0 0	..	24 0 0
Do. 3 in. by 9 in.	20 0 0	..	21 0 0
Battens	15 0 0	..	16 0 0
Second yellow deals, 3 in. by 11 in.	17 10 0	..	18 10 0
Do. 3 in. by 9 in.	16 0 0	..	17 0 0
Battens	12 10 0	..	13 10 0
Third yellow deals, 3 in. by 11 in.	14 0 0	..	15 0 0
Do. 3 in. by 9 in.	13 10 0	..	14 10 0
Battens	11 10 0	..	12 10 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	16 10 0	..	17 10 0
First white deals, 3 in. by 9 in.	14 10 0	..	15 10 0
Battens	13 0 0	..	13 10 0
Second white deals, 3 in. by 11 in.	14 10 0	..	15 10 0
Second white deals, 3 in. by 9 in.	13 0 0	..	14 0 0
Battens	12 0 0	..	12 10 0
Pitch-pine: deals	25 0 0	..	26 10 0
Under 2 in. thick extra	0 10 0	..	1 0 0
Columbian or Oregon Pine, best quality	23 10 0	..	26 0 0
Yellow Pine — First, regular sizes	50 0 0		upwards.
Oddments	35 0 0		"
Seconds, regular sizes	36 0 0		"
Oddments	31 0 0		"
Kauri Pine — Planks per ft. cube	0 5 6	..	0 6 6
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	..	0 3 0
Small " "	0 2 6	..	0 3 0
Wainscot Oak Logs, per ft. cube	0 7 6	..	0 9 0

WOOD (*Continued*).

JOINERS' WOOD (*Continued*)—	£ s. d.		£ s. d.
Dry Wainscot Oak, per ft. super. as inch	0 0 10	..	0 1 2
¼ in. do. do.	0 0 9	..	0 1 0
Dry Mahogany—Honduras, Tabasco, per ft. super, as inch	0 0 10	..	0 1 3
Selected, Figury, per ft. super, as inch	0 1 6	..	0 2 6
Cuba Mahogany	0 1 4	..	0 2 6 upwards.
Dry Walnut, American, per ft. super, as inch	0 0 10	..	0 1 2
French, "Italian," Walnut	0 0 10	..	0 1 4
Teak, per load (Rangoon or Moulmein)	20 10 0	..	26 0 0
Do., do. (Java)	19 0 0	..	2: 10 0
American Whitewood planks, per ft. cube	0 5 6	..	0 6 6
Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 14 6	..	0 18 0
1 in. by 7 in. yellow, planed and matched	0 14 9	..	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 17 6	..	1 3 0
1 in. by 7 in. white, planed and shot	0 14 0	..	0 16 0
1 in. by 7 in. white, planed and matched	0 14 3	..	0 16 6
1¼ in. by 7 in. white, planed and matched	0 16 6	..	0 8 6
¼ in. by 7 in. yellow, matched and beaded or V-jointed boards	0 12 6	..	0 15 0
1 in. by 7 in. „ „	0 15 0	..	0 18 6
¼ in. by 7 in. white „ „	0 12 0	..	0 14 0
1 in. by 7 in. „ „	0 14 6	..	0 16 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	9 0 0	..	10 0 0
Compound Girders, ordinary sections	11 0 0	..	12 0 0
Steel Compound Stanchions	12 0 0	..	13 0 0
Angles, Tees, and Channels, ordinary sections	11 0 0	..	12 0 0
Flitch Plates	11 0 0	..	12 0 0
Cast Iron Columns & Stanchions, including ordinary patterns	8 10 0	..	9 0 0

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	9 0 0	..	9 10 0
Staffordshire Crown Bars, good merchant quality	6 5 0	..	9 15 0
Staffordshire "Marked Bars"	11 0 0	..	—
Mild Steel Bars	9 5 0	..	9 15 0
Hoop Iron, basis price	10 0 0	..	—
„ „ Galvanised	17 10 0	..	—
(* And upwards, according to size and gauge.)			
Sheet Iron Black—			
Ordinary sizes to 20 g.	10 5 0	..	—
„ „ 24 g.	11 5 0	..	—
„ „ 26 g.	12 15 0	..	—
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 10 0	..	—
Ordinary sizes to 22 g. and 24 g.	16 0 0	..	—
Ordinary sizes to 26 g.	17 0 0	..	—
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	18 10 0	..	—
„ „ 22 g. and 24 g.	19 0 0	..	—
Ordinary sizes to 26 g.	20 10 0	..	—
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	15 0 0	..	—
Ordinary sizes, 22 g. and 24 g.	15 5 0	..	—
Ordinary sizes, 26 g.	16 15 0	..	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 10 0	..	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 10 0	..	—
Best Soft Steel Sheets, 26 g.	15 10 0	..	—
Cut Nails, 3 in. to 6 in.	11 0 0	..	11 10 0
(Under 3 in., usual trade extras.)			

LEAD, &c.

	Delivered in London. £ s. d.		
LEAD—Sheet, English, 4 lb. and up	23 17 6	..	—
Pipe in coils	24 7 6	..	—
Soil pipe	27 7 6	..	—
Compo pipe	27 7 6	..	—
ZINC—Sheet—	In casks of 10 cwt.		
Vielle Montagne	32 15 0	..	—
Silesian	32 10 0	..	—
Zinc, in bundles, 1s. per cwt. extra.			
COPPER—			
Strong Sheet per lb.	0 1 1	..	—
Thin „ „	0 1 2	..	—
Copper nails „	0 1 0	..	—
Copper wire „	0 1 0	..	—
BRASS—			
Strong Sheet „	0 1 0	..	—
Thin „	0 1 1	..	—
TIN—English Ingots „	0 2 1	..	—
SOLDER—Plumbers' „	0 0 10½	..	—
Tinmen's „	0 1 2	..	—
Blowpipe „	0 1 4	..	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.			
15 oz. thirds	2½d.	26 oz. fourths	4d.
„ fourths	2d.	32 oz. thirds	5½d.
21 oz. thirds	3½d.	„ fourths	4½d.
„ fourths	3½d.	Fluted Sheet, 15 oz.	3d.
26 oz. thirds	4½d.	„ 21 oz.	4d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.			
¼ Rolled plate	2½d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	3½d.
Rough rolled and rough cast plate	2½d.		
¼ Rough rolled and rough cast plate	3d.		
		Ditto, tinted	5d.

* Not less than two crates.

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 2
„ „ „ in barrels	„	0 2 3
„ „ „ in drums	„	0 2 5
Boiled „ „ in barrels	„	0 2 5
„ „ „ in drums	„	0 2 8
Turpentine in barrels	„	0 2 6
„ in drums	„	0 2 8
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		30 15 0
Red Lead, Dry	per ton	28 0 0
Best Linseed Oil Putty	per cwt.	0 10 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 9
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 6
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 6
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and not to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 6 p.m. on *Wednesday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100l. unless in some exceptional cases and for special reasons.]

***Denotes accepted. †Denotes provisionally accepted.**

BARNES.—For erection of a keeper's cottage at Barnes Common. Mr. G. Bruce Tomes, A.M.Inst.C.E., Council Surveyor, Mortlake, S.W.:—

W. Smith & Co.	£424	R. T. Hughes & Co., Sheen-lane, Mortlake*	£390
A. G. S. Lyford	439		
W. Lowe	415		

BEVERLEY.—Erection of Council school in St. Nicholas-road, for the Town Council:—

R. Potts, Beverley* £5,643

BRENTWOOD.—For the erection of a residence in Priests-lane. Messrs. Charles & W. H. Pertwee, architects and surveyors, Chelmsford:—

C. Parsons	£1,500	H. Potter	£1,475
F. W. Jarvis	1,335	Choat & Son*	1,410
T. J. Bailey	1,500		

BRENTWOOD.—For erection of a proposed new infants' school, for the Managers of the Brentwood National Schools. Mr. A. T. G. Woods, M.S.A., architect, Brentwood:—

Harris Bros.	£2,500 0 0	Clark & Sons	£2,135 19 0
A. Fairhead	2,289 0 0	Cronin & Sons	2,047 16 8
S. Roberts, Ltd.	2,250 0 0	D. Robinson	2,017 0 0
Dowsing & Davis	2,230 0 0	F. W. Jarvis, Brentwood†	1,937 0 0
Hammond & Sons	2,187 0 0	H. Smith	1,909 0 0

CAMBORNE.—Drainage scheme, for the Camborne Urban District Council:—

R. T. Relf & Son	£31,228	0	0
T. Shaddock	17,714	0	0
Monro & Co.	17,561	15	8
Mitchell & Bond	14,337	0	0
C. C. Duke	14,315	0	0
H. E. Blake, Ltd.	14,304	0	0
Pethick Bros., Ltd.	14,264	0	0
R. C. Brebner & Co.	14,093	0	0
A. W. Coles	14,042	0	0
J. Riley	13,720	0	0
A. Carkeek	12,622	0	0
R. E. Naracott, Torquay*	11,700	0	0
Tunnel Scheme.			
R. T. Relf & Co.	19,264	0	0
T. Shaddock	18,315	0	0
J. Riley	15,248	0	0
Monro & Co.	15,178	0	0
R. C. Brebner	13,3 4	0	0
Pethick Bros.	11,994	0	0
A. Carkeek	10,957	0	0
G. Stow & Co.	10,240	0	0
A. W. Coles	9,819	0	0
C. C. Duke	8,922	0	0
R. E. Naracott	8,730	0	0

CHELMSFORD.—Paving Moulsham-street and Springfield-road with wood blocks, for the Town Council:—

W. Griffith & Co., *Ltd** £6,775

CHELMSFORD.—For the construction of a new road on the Greengates Estate, Moulsham. Messrs. Charles & W. H. Pertwee, architects and surveyors, Chelmsford:—

T. J. Bailey	£780 0 0	T. W. Moss	£662 0 0
R. A. Bonnett	787 13 0	W. Lingwood	639 16 3
Davey & Armitage	767 0 0	W. H. Lewin	389 7 7

CHELMSFORD.—For the laying of a water main from the Ash Grove to Boreham House, for the Right Hon. Lord Kenyon, K.C.V.O. Messrs. Charles & W. H. Pertwee, architects and surveyors, Chelmsford:—

J. W. Stapleton & Son	£585	W. Rodgers	£332
Hawkins & Ward	565	W. E. Wisbey*	530

CHISWICK.—For renovations at Belmont Schools, and alterations at the sewage works:—

H. Fowler, Chiswick* £189 18

DARTFORD.—For alterations and additions to the grammar school. Mr. Robt. Marchant, A.R.I.B.A., architect. Quantities by Messrs. Paul & Son, Bedford-row:—

	Less alternative No. 3.		Less alternative No. 3.
Roberts	£4,728 8 3	Friday & Ling	£4,243 0 0
W. F. Blay	4,491 14 0	Podger Bros.	4,119 0 0
Strand Building Co.	4,430 0 0	Ellingham	4,117 0 0
T. Knight	4,366 0 0	Milton	4,088 0 0
Thomas & Edge	4,265 0 0	Smith Bros., Croydon‡	4,083 10 0

‡ Accepted subject to approval of Board of Education.

EYE.—For infirmary, for the Hartismere Board of Guardians:—

N. J. Gibbons, Crowfield* £13,842 16 8

FARNHAM.—For erection of five cottages at Darvill's-lane, Farnham. Mr. R. W. Cass, Surveyor, Farnham Urban District Council:—

W. J. Wilkinson, Downing-street, Farnham £950

FOLKINGHAM.—For seven-roomed cottage, for Mr. T. A. Heathcote. Mr. R. Wadsley, architect, Billingborough:—

Clark & Sons	£414 7 0
J. W. Sharp & Son	397 5 3
Collishaw Bros., Millthorpe, Aslackby*	347 0 0

HARROGATE.—For painting exterior of the Bilton, Oatlands, and Starbeck Council schools. Mr. C. E. Rivers, A.M.Inst.C.E., Borough Engineer and Surveyor:—

—	Bilton. £ s. d.	Starbeck. £ s. d.	Oatlands. £ s. d.
Broadbank & Son	57 0 0	—	—
Decorative Supply Co., Harrogate	40 0 0	38 0 0	23 0 0*
H. Eshelby	—	36 0 0	—
J. Morley & Son, Starbeck	59 0 0	32 0 0*	22 10 0
W. Norman	48 10 0	47 0 0	25 10 0
Winterburn Bros.	76 0 0	—	—
J. Brown	52 10 0	57 0 0	27 0 0
C. Tosa, Harrogate	36 15 0*	37 10 0	34 15 0

IRLAM.—For erection of a new fire-station, stable, etc. Mr. R. H. Winterbottom, Surveyor, Council Offices, Irlam. Quantities by Mr. A. Briggs, Albert-square, Manchester:—

W. Garner, Cadishead, Manchester* £1,170

KINGSTON-ON-THAMES.—For alterations, repairs, etc., at St. Luke's Schools. Mr. R. Hampton Clacas, Borough Surveyor:—

Offer & Sons	£1,267 10 2	Gaze & Sons	£1,140 5
J. & J. Budd	1,142 2 0	Ide & Son	1,106 0

[All of Kingston-on-Thames.]

LONDON.—For erection of a sub-station at Acton-lane, Lower-place, Willesden. Mr. A. W. Blake, M.Inst.E.E., electrical engineer, Kilburn, N.W.:—

I. C. Tennant & Co.	£2,370 0
C. F. Kearley	2,088 15
H. Pickrill	2,070 0
Pasterfield & English	2,050 0
J. McManus, 237, Hammersmith-road*	2,037 0

LONDON.—Erection of conveniences at Norwood Park, for the London County Council:—

Rice & Son	£627	W. Johnson & Co., Ltd., Wandsworth Common*	£580
Rowley Bros.	625		
J. & C. Bowyer, Ltd.	614		

TENDERS—continued on page 138

ESTATES AND SITES NOTES.

TAXING BUILDERS' PROFITS.

IT is officially stated that the provisions of the new Revenue Bill are framed so as to confer exemptions from increment value duty upon builders and others developing estates for building purposes. The avowed intention of the Government is to make it absolutely clear that no part of the builders' trade profits shall be subject even to the possible operation of the increment tax. No increment duty will be payable upon a sale of property by a builder as to any profit that he may make except as to profits which may arise out of the increase in the value of the bare land apart from the buildings, and which are not due to any expenditure or the execution of any works on his part. Such a principle appears to exonerate the builder fully, but only in the manner of its application can the proof of sincerity be found. If only the bare cost of the buildings and other works are to be deducted from the total valuation, the builder will be no better off than he is at present. If, on the other hand, the increased value which is given to the land by those works is taken into account, a fair result should be obtained. There has probably never been so much clear thinking about valuation before. The Chancellor himself stated during the campaign when the Act was initiated that the Government had no intention of taxing "brains." The surveyors, however, plead the Act, and in effect they do tax brains. It would seem that to avoid doing this greater regard should be paid to the potential value of the land in the original valuation.

Central Improvements.

The fact that many central areas in the great cities could be profitably reconstructed is being well exemplified in the case of the Bradford central improvements, the scheme for which has just passed the House of Lords Committee. The Corporation took the initiative, and the great majority of owners concurred. The cost is estimated at over a million pounds; but when the Corporation is receiving the extra rates which are estimated to be due, and the owners are receiving the extra rents from the increased floor spaces and better accommodation available, it is calculated that each will be getting a good return upon the outlay in new streets and new buildings respectively.

Inns of Court Hotel.

The freehold of the Inns of Court Hotel, which was offered by auction, was withdrawn at £95,000.

Guildhall Tavern.

The Guildhall Tavern, partly freehold and partly leasehold, was withdrawn at £28,000—which represents about £19 per ft. over the freehold portion of 1,500 ft.

The Ordnance Survey, 1912-13.

The annual report of the Ordnance Survey which has just been issued, states that during the twelve months ended on March 31, the field work of the 25·34 in. to a mile survey of Ireland was completed, and the greater part of the sheets can now be purchased. The test triangulation made in Morayshire in 1909-11 has been computed, and an exhaustive examination into the accuracy of the old principal triangulation for the British Isles—carried out by comparing the new results with those given by the bases at Salisbury Plain, Lough Foyle, and Paris—establishes the accuracy of the triangulation as being sufficient for all present scientifical purposes as well as for every practical requirement.

A Bit of Old Chelsea.

There will shortly be pulled down the cottages of Arthur-street, King's-road, which, with their gardens, high gates, and now converted stables, form a curious and picturesque group—a relic of Chelsea. At the back is the narrow lane known as "Crooked Usage," leading southwards from Cale (formerly Bond) street to Britten-street, and thence along the north-west side of Chelsea Workhouse.

Trafalgar House, Waterloo-place, S.W.

The Regent-street of Nash is losing its old character rapidly. Among the modern buildings approaching completion is Trafalgar House, Waterloo-place, and Charles-street, S.W. This structure occupies the north-west corner of the parallelogram divided by Pall Mall, and is uniform with the offices of the North British and Mercantile Insurance Company on the north-east corner, erected a few years ago from the designs of Messrs. Thompson & Walford. The architect for the new building is Mr. C. W. Ferrier, 11, Waterloo-place, Regent-street. Messrs. Higgs & Hill, Ltd., South Lambeth-road, S.W., are the general contractors, and the steelwork is by Messrs. Redpath, Brown, & Co., Ltd., Greenwich. The fire-resisting and soundproof flooring is by the Kleine Patent Syndicate, High Holborn, and the asphalt by Messrs. T. Faldo & Co., Effingham House, Arundel-street. The water supply is obtained by Messrs. Arnold Goodwin's Pumpless System.

Hotel, Glasshouse-street, W.

A large "popular" hotel is in course of erection between Golden-square and Piccadilly Circus, on the island site bounded by Glasshouse-street, Sherwood-street, and Brewer-street. The original architects were the late Mr. W. J. Ancell and Mr. Henry Tanner, F.R.I.B.A. The work is being carried out by Mr. Tanner and Mr. F. J. Wills. The steelwork is by Messrs. Dorman, Long, & Co., Middlesbrough.

Nos. 50 and 51, Pall Mall, S.W.

Messrs. Metcalf & Greig have prepared designs for the new building to be erected on the site of Nos. 50 and 51, Pall Mall, now being demolished. The site gives a frontage of about 54 ft. to Pall Pall, and a return frontage up Pall Mall-place of over 100 ft. It is proposed that the building shall be of Classic design with an Aberdeen granite base, Portland stone superstructure, and bronze shop fronts. The ground floor will be arranged as a showroom for motor-cars; there will be a mezzanine floor and seven upper floors.

[*** For some Auction Sales, see page xxii. of this issue.—ED.]

MESSRS.

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FREEHOLDS IN OR NEAR LONDON TO BE OFFERED BY AUCTION.

Property.	District.	Area.	Date of Sale.	Auctioneer.	Possession Obtainable.	Rent.	If Buildings Included.	Page Advertised.
						£ s. d.		
Ten houses, Haldon-road, West-hill	Wandsworth		July 25	Mr. Woods	—	20 0 0 each	—	—
Three houses, Gee-street, two houses, Ludlow-street	E.C.		July 25	J. Walter Neighbour	—	127 0 0	Yes	—
96, Goswell-road	E.C.		July 25	J. Walter Neighbour	—	65 0 0	Yes	—
Fourteen residences	Chingford	About 1 acre each	July 24	Roddick, Colvin, & Clark	—	—	Yes	—
Building land, Daws-hill, Sewardstone	Chingford	About 12 acres	July 28	Roddick, Colvin, & Clark	Immediately	—	—	—
Four ground rents	Chingford		July 28	Roddick, Colvin, & Clark	—	57 17 0	—	—
40 and 42, North-side	Wandsworth Common		July 29	Weatherall & Green	—	190 0 0	Yes	—
44 and 46, North-side	Wandsworth Common		July 29	Weatherall & Green	—	115 0 0	Yes	—
Mission Hall, Lattimore-road	St. Albans	Frontage 54 ft.	July 29	Weatherall & Green	—	—	Yes	—
23, Great Bath-street, Clerkenwell	E.C.		July 29	Sidney H. Motion	On completion	—	—	—
Residence, The Hollies	Potter's Bar	1½ acre	July 29	Swain, Hunnyban, & Taylor	—	—	Yes	—
Building land, The Hollies	Potter's Bar	3 acres	July 29	Swain, Hunnyban, & Taylor	Vacant	—	—	—
22 and 23a, Peter-street, 3, 4, and 5, Green's-court, Wardour-street	Soho		July 30	Jenkinson, Brinsley, & Jenkinson	—	65 0 0	—	—
16, Birkbeck-road	Acton		July 30	Athawes, Son, & Co.	—	40 0 0	Yes	—
22, Grafton-terrace, Kentish Town	N.W.		July 30	Athawes, Son, & Co.	—	40 0 0	Yes	—
35, 37, and 39, Ordnance-road	East Greenwich		July 30	Jenkinson, Brinsley, & Jenkinson	1964	8 5 0	—	—
92 and 94, St. George's-road, and 49-51, Garden-row	Southwark		July 30	Douglas Young & Co.	—	—	Yes	—
Eight houses and shop, 59-67, Little Surrey-street	Southwark		July 30	Douglas Young & Co.	—	—	Yes	—
29-30, Milcote-street, and 1-3, King James-street	Southwark		July 30	Douglas Young & Co.	—	—	Yes	—
31-33, Little Surrey-street	Southwark		July 30	Douglas Young & Co.	—	11s. week	Yes	—
18-20, Earl-street	Southwark		July 30	Douglas Young & Co.	—	21 0 0 p.a.	—	—
17-19, King James-st., 61a, Lancaster-st.	Southwark		July 30	Douglas Young & Co.	—	5 0 0	—	—
Easthill, Oakleigh Park	N.	1½ acre	July 30	C. Sparrow & Son	On completion	—	Yes	—
Highclere, St. Mary's-ave., Hendon-lane	Finchley		July 30	C. Sparrow & Son	Immediately	—	Yes	—
4, 5, 6, and 7, Edison-road	Crouch End		July 31	F. Varley & Son	—	182 0 0	Yes	—
2, Orchard-villas	Woodford		July 31	F. H. Worley	Immediately	26 0 0	Yes	—
Chelmsford-road Nursery	Woodford	Frontage abt. 6[illegible] ft.	July 31	F. H. Worley	Sept. 1917	52 0 0	Yes	—
4, Derby-villas, Derby-road	Woodford		July 31	F. H. Worley	—	442 0 0	Yes	—
1-2, Cambridge-terrace, Horn-lane	Woodford		July 31	F. H. Worley	—	11 0 0	—	—
Englebergh, Chelmsford-road								
Tibbermuir, Grove-hill, and plot of building land	Woodford	Frontage 60 ft.	July 31	F. H. Worley	—	100 0 0	Yes	—
63-68, College-street, 26-34, Leader-street	Chelsea	21,650 sq. ft.	No date	Messrs. Trollope	Vacant	—	—	—
North and South warehouses, Sun-court, Red Lion Market, Golden-lane	E.C.		No date	W. Vincent Jull (Horne & Co.)	—	1,500 0 0	Yes	—
74, 77, and 79, Golden-lane	Finsbury		No date	W. Vincent Jull (Horne & Co.)	—	1,800 2 0	Yes	—
14, Bayer-street	Finsbury		No date	W. Vincent Jull (Horne & Co.)	—	200 0 0	Yes	—
16 and 16a, Bayer-street	Finsbury		No date	W. Vincent Jull (Horne & Co.)	—	780 0 0	Yes	—
17, Bayer-street	Finsbury		No date	W. Vincent Jull (Horne & Co.)	—	4,330 11 2	Yes	—
82, 83, Golden-lane	Finsbury		No date	W. Vincent Jull (Horne & Co.)	—	2,296 10 0	Yes	—
1, Baterfield-st., and 36, Hatfield-st.	Finsbury		No date	W. Vincent Jull (Horne & Co.)	—	613 2 6	Yes	—

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OXFORD STREET.—Area 10,000 ft. Ground rent 9/- a foot.

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WESTMINSTER (main road position).—Area 8,000 ft. Ground rent £600 per annum.

CAVENDISH SQUARE (facing).—Area 3,400 ft. Ground rent £650 per annum.

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TELEGRAMS: "DENSHAMINE, LONDON."

TENDERS—*continued from page 105.*

LONDON.—Repair of carriageway at Blackwall Tunnel, for the London County Council:—

Acme Flooring and Paving Co. (1904), Ltd.	£2,301 5 10
Dick, Kerr, & Co., Ltd.	2,262 4 8
W. Griffiths & Co., Ltd.	2,192 12 2
J. Mowlem & Co., Ltd.	2,168 16 0
G. J. Anderson	1,932 3 8
W. H. Wheeler & Co., Ltd., 233, Blackfriars-road, S.E.*	1,868 14 6

LONDON.—Supply of 50,000 creosoted deal paving blocks, 3 in. by 9 in. by 4½ in., for Wood-lane tramways, for the London County Council:—

	Price per 1,000 delivered by Van on Site.
Improved Wood Pavement Co., Ltd.	£7 17 0
T. Gabriel & Sons & Burtons	7 17 0
J. B. Lee & Sons Ltd.	7 9 6
W. W. Howard Bros. & Co.	7 9 5
Acme Flooring & Paving Co. (1904), Ltd.	7 8 6
W. Griffiths & Co., Ltd.	7 6 10
Bort, Boulton, & Haywood, Ltd., 64, Cannon-street, E.C.*	7 6 10

LONDON.—Enlargement of New Cross Fire Station, for the London County Council:—

Rice & Son	£7,979 0	J. W. Falkner & Son	£7,189 0
Holloway Bros. (London), Ltd.	7,885 0	Kerridge & Shaw	6,969 0
Ashby & Horner	7,600 0	Holliday & Greenwood, Ltd.	6,893 0
J. Marsland & Sons	7,346 0	Triggs & Co.	6,795 0
J. Garrett & Son	7,271 0	H. L. Holloway	6,632 0
Higgs & Hill, Ltd.	7,250 0	J. & C. Boyer, Ltd., Upper Norwood, S.E.*	6,594 2
W. Downs	7,215 0		

LONDON.—Refitting offices and reconstruction of drainage system at Netherwood-street School, Hampstead, for the London County Council:—

W. S. Barton & Co.	£2,199	L. C. Tennant & Co., Grange Works, Willesden-green*	£1,170
B. Finch & Co., Ltd.	2,125		
W. Beattie	1,625		
F. Smith & Co.	1,900		

LONDON.—Trade school for girls at Hammersmith, for London County Council:—

	For completion in 9 months.	8 months.
G. E. Wallis & Sons	£21,731	—
J. & C. Bowyer, Ltd.	21,393	—
Leslie & Co., Ltd.	21,361	£22,361
H. L. Holloway	21,200	21,650
J. Garrett & Son	21,189	21,189
Higgs & Hill, Ltd.	20,993	21,493
J. Appleby & Sons	20,592	21,092
Patman & Fotheringham, Ltd.	20,473	21,000
W. Downs	20,310	20,410
Rowley Bros.	20,289	20,500
Holliday & Greenwood, Ltd.	19,738	20,000
W. Lawrence & Son, 21, Finsbury-circus*	19,424	19,594

[By the adoption of several alterations Messrs. Lawrence's tender was reduced to £19,154.]

LONDON.—For erection of twenty-eight cottages on the Malthouse area. Mr. G. Bruce Tomes, A.M.Inst.C.E., Surveyor, Mortlake, S.W.:—

W. Lowe	£8,386 18 1	T. Bendon	£7,379 0 0
R. T. Hughes	8,050 0 0	R. Skinner	7,302 0 0
A. G. S. Lyford	8,049 0 0	W. Smith & Sons	6,973 0 0
Thomas & Edge	7,972 0 0	T. Millman, South Ealing, S.W.*	6,950 0 0
H. L. Leeder	7,625 0 0		
H. L. Holloway	7,566 0 0		

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LONDON.—Temporary school at Bellie-street, Finsbury, for London County Council Education Committee:—

Humphreys, Ltd.	£1,430	W. Harbrow, Iron Building Works, South Bermondsey*	£965
J. Harrison & Co.	1,170		
Rowley Bros.	1,065		

NEATH.—For the erection of ninety-three workmen's dwellings, including paving of footpaths, for the Neath Corporation. Mr. D. M. Jenkins, A.M.Inst.C.E., Borough Engineer:—

A. Hill	£22,505 0 0	White Bros.	£16,674 13 9
J. Pye & Co.	20,829 10 0	H. Rogers	16,450 0 0
W. & J. Jenkins	19,705 15 3	Edwards & Lloyd, Maesteg*	16,033 5 0
W. J. Card & Co.	18,519 11 6	J. Snow, jun.	15,838 12 0
Waring, Cole, & Waring	16,726 0 6		

OUNDLE.—King's Cliffe water scheme, for Rural District Council:—

Kettle & Co, Peterborough*	£947 2

RAUNDS.—For extension and alterations to "The Delves" to form "Scattered Homes," for Thrapston Board of Guardians. Messrs. H. A. Cooper & Son, architects, Central Chambers, Kettering:—

W. Crates & Son	£1,139 14	W. Thompson	£1,065 0 0
C. R. Pettit	1,120 0	O. P. Drever & Son	1,065 0 0
J. Lawrence	1,114 0	W. & C. Lonkes	1,047 0 0
Freeman & Son	1,110 0	Smith & Son, Raunds*	1,037 0 0
Markett & Co.	1,090 0	J. Askham	705 5 6
Smith, Edmunds, & Co.	1,077 0		

ROMFORD.—For alterations and additions to the Albert-road School, also manual instruction room. Mr. Frank Whitmore, County Architect, Chelmsford:—

Clemens Bros.	£2,046 8	Oglin & Co.	£1,845 0
Dowsing & Davies	1,990 0	Hammond & Son	1,812 0
C. Foster & Son	1,975 0	G. Bruty	1,732 0
A. E. Symes	1,927 0	W. S. Sharpin, Bow*	1,692 0
G. Brown	1,906 3		
D. Robinson & Son	1,892 0		

STOKENCHURCH.—Artisans' dwellings, for Wycombe-road District Council. Mr. A. L. Clarke, surveyor, 15, High-street, High Wycombe. Quantities by the surveyor:—

R. H. Harris & Co., Great Marlow,* £380 for one pair, £1,150 for three pairs, £2,220 for six pairs.
G. H. Gibson & Son, £423 per pair; if more than one pair, £414 per pair.
G. Lane, £536 13s. 8d. for one pair, £1,063 for two pairs, £2,126 for four pairs, and £3,189 for six pairs.
E. Clark, £475 per pair, taking three or more pairs.
Coppock & Trafford, £185 per house for four houses.
C. H. Hunt & Son, £407 10s. per pair for twelve houses, £417 10s. per pair for eight houses, £425 per pair for four houses.
F. Nash, £478 10s per pair.

SOUTHAMPTON.—For reconstruction of "B" warehouse on the town quay, for the Harbour Board:—

H. Lovett, Ltd.*	£13,061

TIVERTON.—Erection of eighteen houses for the working class, for the Tiverton Town Council:—

J. Greter & Sons, Tiverton*	£2,795

WALSALL.—Steel and iron building at electric generating station, for Town Council:—

Normans, Wolverhampton*	£397

WEST HAM.—For removal and re-erection of the Star-lane Temporary School, for the Education Committee:—

W. J. Clemens	£650	H. C. Horswill	£498
A. F. Symes	578	W. Harbrow	483
A. Webb	573	F. Smith & Co.	479
J. T. Luton	549	W. J. Maddison*	472

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